

Nottingham City Council

Local Flood Risk Management Strategy Strategic Environmental Assessment: Environmental Report

September 2014



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Nottingham
City Council

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The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by URS has not been independently verified by URS, unless otherwise stated in the Report.

*The methodology adopted and the sources of information used by URS in providing its services are outlined in this Report. The work described in this Report was undertaken in **August 2014** and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances.*

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NON-TECHNICAL SUMMARY

Nottingham City Council (NCC) is working to produce a Local Flood Risk Management Strategy (LFRMS) under The Flood and Water Management Act (2010). The Strategy covers flood risk arising from surface water run-off, groundwater and 'ordinary' watercourses. Other sources of flooding include 'main rivers' and tidal waters which are the responsibility of the Environment Agency (EA) and other organisations. NCC is working with the EA to facilitate a consistent and integrated approach to flood risk.

NCC's administrative area comprises the city of Nottingham itself and smaller settlements including Bulwell, Top Valley, Broxtowe, Old Basford, Sherwood, Hyson Green, St Ann's Wollaton and Clifton, and as such these are the areas covered by the Local Flood Risk Management Strategy. This Strategic Environmental Assessment (SEA) also takes into account the wider environment in close proximity to the City of Nottingham, inclusive of Principle Urban Area. This is due to the urban nature of the study area and the fact that administrative confines do not dictate environmental boundaries.

Strategic Environmental Assessment

The aim of the SEA process is to determine the environmental effects which may result from the implementation of a plan, programme or strategy, such as a LFRMS. Numerous receptors are considered including that of human health, biodiversity, water, climate change and the natural and historical environment. A scoping report precedes this Environmental Report and determined the environmental baseline of the study area and the receptors which are most likely to be affected by implementation of the Strategy. The Environmental Report documents the entire SEA process of NCC's LFRMS against a set of SEA objectives.

NCC's LFRMS

The overarching aim of the LFRMS is a strategy to reduce the impact of flooding on people, property and businesses in Nottingham. The Strategy is a high level, statutory document which outlines the approach to limiting the impacts of local flooding within the NCC administrative area. The strategy promotes greater collaborative efforts between organisations responsible for managing local flood risk including that of Risk Management Authorities (RMAs) and key stakeholders. The Strategy does not include proposals or details of site specific measures; however some of the objectives and associated action plans would lead to such measures in the future and may require further assessment through the Environmental Impact Assessment framework. As specific schemes take place the outcomes from them can be fed back into future iterations.

Assessment Results

In order to measure the likely environmental impacts of implementing the Strategy, the Strategies objectives were 'tested' against a number of SEA objectives.

The SEA has shown that the NCC LFRMS is likely to have beneficial impacts upon the environment in both the short and long term (i.e. beyond the life of the strategy). Largely this is due to the proactive, holistic, sustainable approach of the Strategy which has the primary aim of protecting Nottingham's people, homes, businesses and key assets including Nottingham's rich cultural heritage. Each of the Strategy objectives is predicted to fulfil each environmental objective identified within the SEA framework with a beneficial outcome. For example the Strategy's objectives of working collaboratively with partners, community education and engagement and providing local flood risk information work together in ensuring that the communities of Nottingham are prepared for any imminent flood which ultimately reduces their risk as a result of hazard preparedness and increased resilience.

The majority of the Strategy objectives are likely to have indirect beneficial effects upon the environment as they relate to improved data acquisition, enhanced knowledge, understanding and high level management of flood risk, rather than individual actions which would potentially have a larger effect 'on the ground'.

The benefits of implementing the Strategy are perhaps best demonstrated by the 'do nothing' alternative which demonstrates an adverse impact upon the environment through a failure to deliver the LFRMS. In the short term a lack of a LFRMS would leave local communities and assets at risk of flooding. Moreover it is likely that this risk would only heighten over time as a result of climate change and its associated impacts upon flood frequency and magnitude.

Whilst the assessment of cumulative impacts suggested that adverse impacts could arise over time, the resounding prediction was that a vast number of beneficial cumulative impacts would arise from the implementation of the Strategy, a prediction which further highlights the thorough, comprehensive, joined-up approach of the strategy.

As the SEA has suggested that no adverse impacts will result from the implementation of the Strategy no mitigation measures have been put forward at this stage. However measures for mitigation should be made at an individual site level through the Environmental Impact Assessment process, to ensure the mitigation of potential adverse effects is ensured.

As required by the SEA Directive a monitoring strategy has been devised. Monitoring of the Strategy will drive continual improvement and enable the identification and management of any unforeseen

adverse effects. Monitoring also enables the successes of the scheme to be determined and capitalised upon.

1 INTRODUCTION

NCC is working to produce a Local Flood Risk Management Strategy (LFRMS) under The Flood and Water Management Act (2010). The Flood and Water Management Act aims to facilitate the comprehensive management of flood risk for the public, homes and businesses, whilst helping to safeguard community groups from the associated costs of flood and water management and protecting both water supplies and quality¹. The purpose of the LFRMS (or 'the Strategy' as it will be referred to throughout this report) is to guide the management of local flood risk across the City in a holistic manner by reflecting local circumstances such as the level of risk and potential impacts of flooding on the local environment and population. The NCC LFRMS has been developed in consultation with the County Council as it would play a part in the wider flood risk management strategy for the Nottingham Principle Urban Area.

The SEA process, which has culminated in the preparation and delivery of this Environmental Report, will inform and shape delivery of the preferred long-term strategy. This will be accomplished through the identification of:

- The relationship of the Strategy with other relevant plans and programmes;
- Relevant environmental protection objectives as established at International, National or Community level;
- Likely significant effects of the implementation of the Strategy on relevant environmental receptors in line with baseline condition; and,
- Existing environmental and relevant challenges apparent within the local area which may be affected by the implementation of the Strategy.

1.1 Strategic Environmental Assessment

Article 1 of the European Directive 2001/42/EC on the Assessment of the Effects of Certain Plans and Programmes on the Environment (the SEA Directive) states that the preparation of an SEA will *"provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development"*². More simply an SEA is undertaken to identify the significant impacts that plans, programmes and strategies may have on the existing and future environment, and therefore increase the consideration of environmental issues in decision making processes. The SEA

¹ Flood and Water Management Act 2010 <http://www.legislation.gov.uk/ukpga/2010/29/section/1>

² SEA Directive 2001 <http://ec.europa.eu/environment/eia/sea-legalcontext.htm>

process ensures that environmental considerations inform the development of objectives and measures of the Strategy, whilst mitigating against adverse environmental impacts and highlighting areas of environmental and socioeconomic opportunity. Additionally the SEA process identifies how the Strategy can contribute to the achievement of wider environmental objectives, including Water Framework Directive (WFD) objectives³.

1.2 Structure of the Environmental Report

This Environmental Report documents the SEA process for the city of Nottingham. The purpose of this Environment Report is to inform the preferred long-term Strategy through the identification of the likely significant effects of the implementation of the Strategy on relevant environmental receptors. The SEA Directive lists the content that is required in the Environment Report (Annex I), and these requirements have been listed in Table 1-1 below:

Table 1-1 : SEA Environmental Report Requirements

Environmental Report Requirements	Report Section
(a) an outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes;	Section 5
(b) the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme;	Section 7
(c) the environmental characteristics of areas likely to be significantly affected;	Section 7 and Appendix B
(d) any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC (The Birds Directive) and 92/43/EEC (The Habitats Directive);	Section 7 and Appendix B
(e) the environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation;	Section 6 and Appendix A
(f) the likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors;	Section 9

³ Water Framework Directive 2000 http://ec.europa.eu/environment/water/water-framework/index_en.html

(g) the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme;	Section 10
(h) an outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information;	Section 9, 8, 4 and 3.
(i) a description of the measures envisaged concerning monitoring in accordance with Article 10;	Section 10
(j) a non-technical summary of the information provided under the above headings.	Section 1

In addition to the above sections listed in Table 1-1;

- Section 2 provides an introduction to the SEA process and why it is being carried out;
- Section 3 provides detail on how statutory and non-statutory consultee responses were addressed and subsequently which areas of the SEA have been developed;
- Section 4 provides a description on the methodology of the SEA process; and
- Section 8 sets out the SEA objectives, how they have been refined and the reason behind their development. Also within this section, the approach used for the assessment of the Strategy objectives, actions and alternatives is set and described.

2 CONSULTATION

Stakeholder engagement is important to the development of the Strategy and the SEA, in order to arrive at a strategy that is acceptable and to engage all parties in the SEA process.

The SEA Directive imposes the following requirements for consultation:

- Authorities which, because of their environmental responsibilities, are likely to be concerned by the effects of implementing the plan or programme, must be consulted on the scope and level of detail of the information to be included in the Environmental Report. These authorities are designated in the SEA Regulations as the Consultation Bodies (Consultation Authorities in Scotland);
- The public and the Consultation Bodies must be consulted on the draft plan or programme and the Environmental Report, and must be given an early and effective opportunity within appropriate time frames to express their opinions;
- Other EU Member States must be consulted if the plan or programme is likely to have significant effects on the environment in their territories; and,
- The Consultation Bodies must also be consulted on screening determinations on whether SEA is needed for plans or programmes under (i.e. those which may be excluded if they are not likely to have significant environmental effects).

As is the case with the NCC LFRMS, such strategies are likely to require statutory SEA as recommended by the Department for Environment, Food and Rural Affairs (DEFRA). Acknowledging the above requirements, the scoping report prepared for NCC LFRMS has been the subject of consultation by the following statutory consultation bodies:

- Environment Agency;
- English Heritage (EH); and,
- Natural England (NE).

The consultation period lasted for duration of 5 weeks ending the 1st August 2014. The Scoping Report was also circulated internally within NCC and comments were received from the following teams:

- Parks and Open Spaces;
- Transport Strategy;

- Nottinghamshire Wildlife Trust;
- Severn Trent Water; and,
- Energy Services (climate change).

Comments and recommendations on the Scoping Report from statutory consultees have been acknowledged and addressed in this Environment Report (Appendix B). Additionally this Environmental Report will be published for consultation alongside the NCC LFRMS.

2.1 Development from Scoping Report

Comments and recommendations on the Scoping Report have been acknowledged, and the following amendments have been made, please see Appendix D for a detailed review of consultation feedback and subsequent responses:

- Re-wording of Sites of Importance to Nature Conservation (SINCs) to Local Wildlife Sites (LWS) in line with a change in national terminology (Section 7.3);
- Update of 'Biodiversity' under the environmental baseline (Section 7.3);
- Update of 'Landscape' under environmental baseline (Section 7.3);
- Inclusion of invasive/non-native species management in SEA Objective 3 as a key topic issue (Section 8.1);
- Re-wording of Section 7.3 in accordance with Severn Trent Water's comments that Strategy measures and objectives may give rise to activities that emit greenhouse gases or other pollutants;
- Inclusion of combined sewer overflows in Section 7.2 (Local flood risks);
- Update of legislation relating to Biodiversity in line with suggestions made by Nottingham Wildlife Trust (Appendix B1);
- Update of baseline information regarding biodiversity as suggested by Natural England (Appendix B1) including an acknowledgment of the importance of geodiversity assets;
- Clarification of the scope of the SEA in regard to Landscape and visual impact assessments and future advice for such assessments;
- Inclusion of 'Access and Recreation' considerations within the Sustainability section;
- Update of 'Related Plans, Programmes and Strategies' in line with comments made by English Heritage;
- Inclusion of 'Heritage at Risk' and associated mapping;
- Inclusion of monitoring indicators in section 10.3 as suggested by English Heritage for Cultural, Architectural and Archaeological assets.

2.2 Dealing with Uncertainties

As noted within the SEA Directive:

'An SEA need not be done in any more detail, or using any more resources, than is useful for its purpose. The Directive requires consideration of the significant environmental effects of the plan or

programme, and of reasonable alternatives that take into account the objectives and the geographical scope of the plan or programme’.

It is not often deemed appropriate or practicable to predict the effects of an individual project-level proposal in the degree of detail that would normally be required for an EIA project within the bounds of an SEA. The objectives of the SEA and the Strategy itself are high level and the Strategy does not include proposals or detail of site specific measures for management of local flood risk that can be assessed within the SEA. It is acknowledged that some of the Strategy objectives, and the measures required to deliver them, have the potential to lead to development of site specific action plans or on the ground management options and activities in the future (such as flood storage areas, or improved drainage management). Where an Environmental Impact Assessment (EIA) is needed later for a project, it is likely to be informed by the findings of the SEA, but it will not usually be appropriate to provide the level of detail needed for EIA in the context of the plan or programme.

Whilst there is a high level of uncertainty in the areas listed below, there is still some level of detail known at this stage:

Known: There will be collaboration with Risk Management Authorities and stakeholders to deliver effective maintenance, improve understanding of flood risk and jointly invest in schemes and share expertise

Unknown: Maintenance regimes and schedules; details of investments and through which mechanisms/platforms the sharing of expertise will be delivered.

Known: New developments will be sustainable and not at risk of flooding, delivering this objective will not affect the flooding potential of other local/neighbouring areas.

Unknown: The exact locations and design of proposed developments, and the mitigation measures in place to prevent flooding on-site and in the surrounding area

Known: Flood risk management and maintenance schemes will be cost-effective, proportionate and risk-based.

Unknown: The methodologies/frameworks used to determine risk and cost-effectiveness.

Known: The Strategy will incorporate community education and engagement measures to raise the awareness flood risk, resilience measures, preparedness and riparian responsibilities.

Unknown: How the educational campaigns will be delivered and how this will translate to flood risk preparedness

Known: Multiple benefits will be derived from the Strategy beyond that of flood and water management opportunities, including climate change adaptation, enhancement of the natural environment, improved water quality and the provision of amenity benefits.

Unknown: The exact benefits to be derived, how these benefits will arise and by what mechanisms

Known: A catchment based approach will be utilised which will promote a joined-up approach to flood risk management.

Unknown: The methods and frameworks for delivering this approach and the reliance on collaboration with other authorities

Known: Enhanced local flood risk information (improved data, asset information and knowledge of current and future local flood risk using a risk-based approach) will be facilitated through the LFRMS.

Unknown: The mechanisms and costs behind the delivery of this information and the intended recipients of this data and how it shall be used.

It must be noted that an Action Plan has been developed to guide the management of local flood risk in Nottingham. The Action Plan draws on all available plans and guidance and considers all elements of flood risk management, including flood alleviation schemes, maintenance activities, strategies and studies, community engagement and asset information improvements. The delivery timescales included in the Action Plan are indicative and their delivery is subject to viability, feasibility, funding availability and community buy-in. If a scheme is listed in the Action Plan it is not a guarantee that the measures will be delivered. Moreover it is an indication of where the City Council intends to invest if funding becomes available. The Action Plan differentiates between short and long term initiatives.

The Strategy is a Living Document and this Action Plan will be updated annually to reflect work that has been completed, any change in funding status or priorities and new schemes that could be delivered.

As a result of the above uncertainties the SEA will therefore provide an assessment at a level of detail that is commensurate with the nature of the Strategy objectives, which recognises the uncertainty in spatial and technical scope and hence considers generically how the Strategy could lead to options and activities which in turn lead to significant environmental effects.

3 STRATEGIC ENVIRONMENTAL ASSESSMENT

3.1 The Purpose of Strategic Environmental Assessment

SEA is an iterative, systematic, publicly accountable framework with an overarching aim of integrating environmental considerations within policy development at the earliest opportunity whilst providing an 'audit trail' of option development and environmental mitigation.

A SEA involves the systematic identification and evaluation of the potential environmental impacts of high-level decision-making (e.g. a plan, programme or strategy). By addressing strategic level issues, the SEA aids the selection of the preferred options, directs individual schemes towards the most environmentally appropriate solutions and locations and helps to ensure that resulting schemes comply with legislation and other environmental requirements. Impacts should not just be considered on a direct basis but should encompass temporary, permanent, positive, negative, secondary, cumulative and synergistic impacts over a range of timescales and probabilities. Receptors to such impacts include: Biodiversity, human health, biodiversity, water, climatic factors, material assets, cultural heritage (architecture and archaeological heritage), landscapes, and the interrelationships between the above.

The SEA Directive is transposed into UK law through the following:

- *The Environmental Assessment of Plans and Programmes Regulations 2004 (Statutory Instrument 2004 No. 1633);*
- *The Environmental Assessment of Plans and Programmes Regulations (Northern Ireland) 2004 (Statutory Rule 2004 No. 280);*
- *The Environmental Assessment of Plans and Programmes (Scotland) Regulations 2004 (Scottish Statutory Instrument 2004 No. 258), and,*
- *The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004 (Welsh Statutory Instrument 2004 No. 1656 (W.170)).*

The methodology for undertaking this assessment will follow Communities and Local Government's (CLG) Guidance on SEA⁴.

3.2 Stages in the SEA Process

The CLG Guidance on SEA identifies five key stages in the SEA process as set out in Figure 3-1.

The stages below are intended to be valid for all plans and programmes to which the Directive implies, (including that of water management), and irrespective of their geographical scope. Stages A

⁴ CGL Guidance on SEA
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7657/practicalguidesea.pdf

and the associated tasks were carried out in the NCC LFRMS SEA Scoping Report. This Environmental Report documents Stages B and C of the process. In order to meet the requirements of the SEA Directive Stage D will occur next wherein both the draft LFRMS and Environmental Report will be reviewed and the feedback from such consultation will be used to further develop the strategy. Stage E 'Implementation and Monitoring' will occur over the life of the strategy in order to ensure continual improvement.

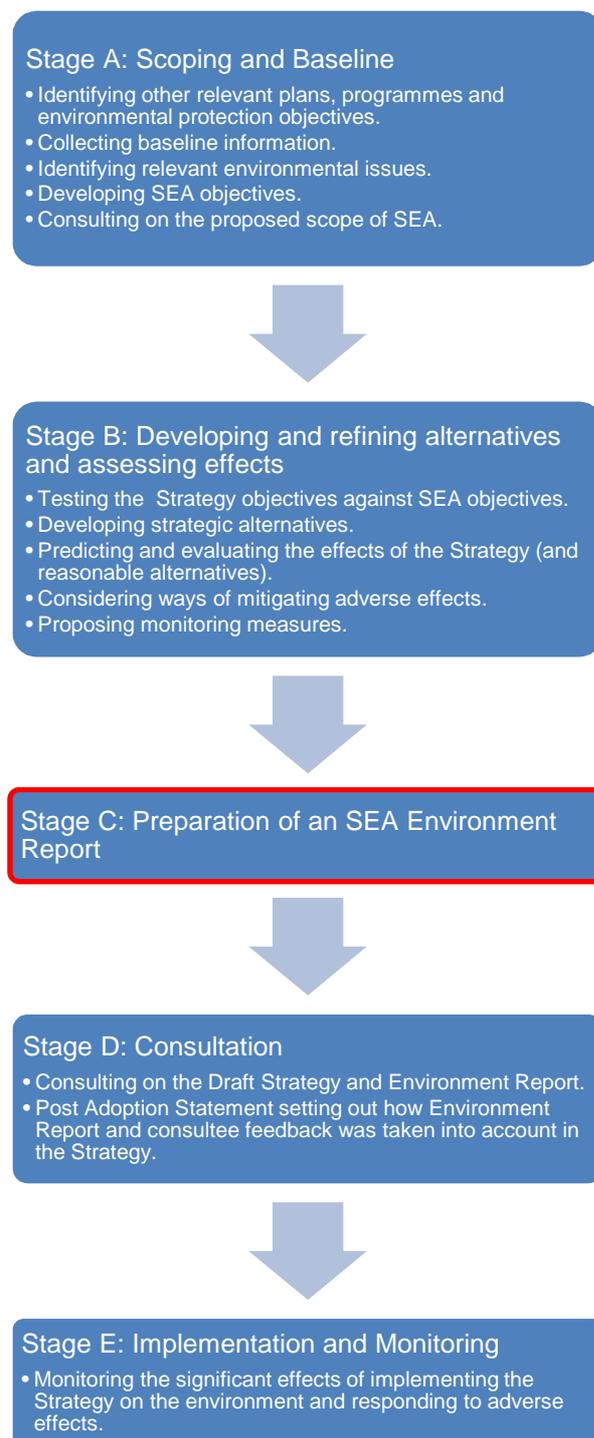


Figure 3-1. Stages in the SEA Process.

4 THE NOTTINGHAM CITY COUNCIL LFRMS

Nottingham City Council's administrative area comprises the city of Nottingham itself and smaller settlements including Bulwell, Top Valley, Broxtowe, Old Basford, Sherwood, Hyson Green, St Ann's Wollaton and Clifton. The Council area is shown in Figure 4-1. According to the 2011 census the population of Nottingham is approximately 305,700.

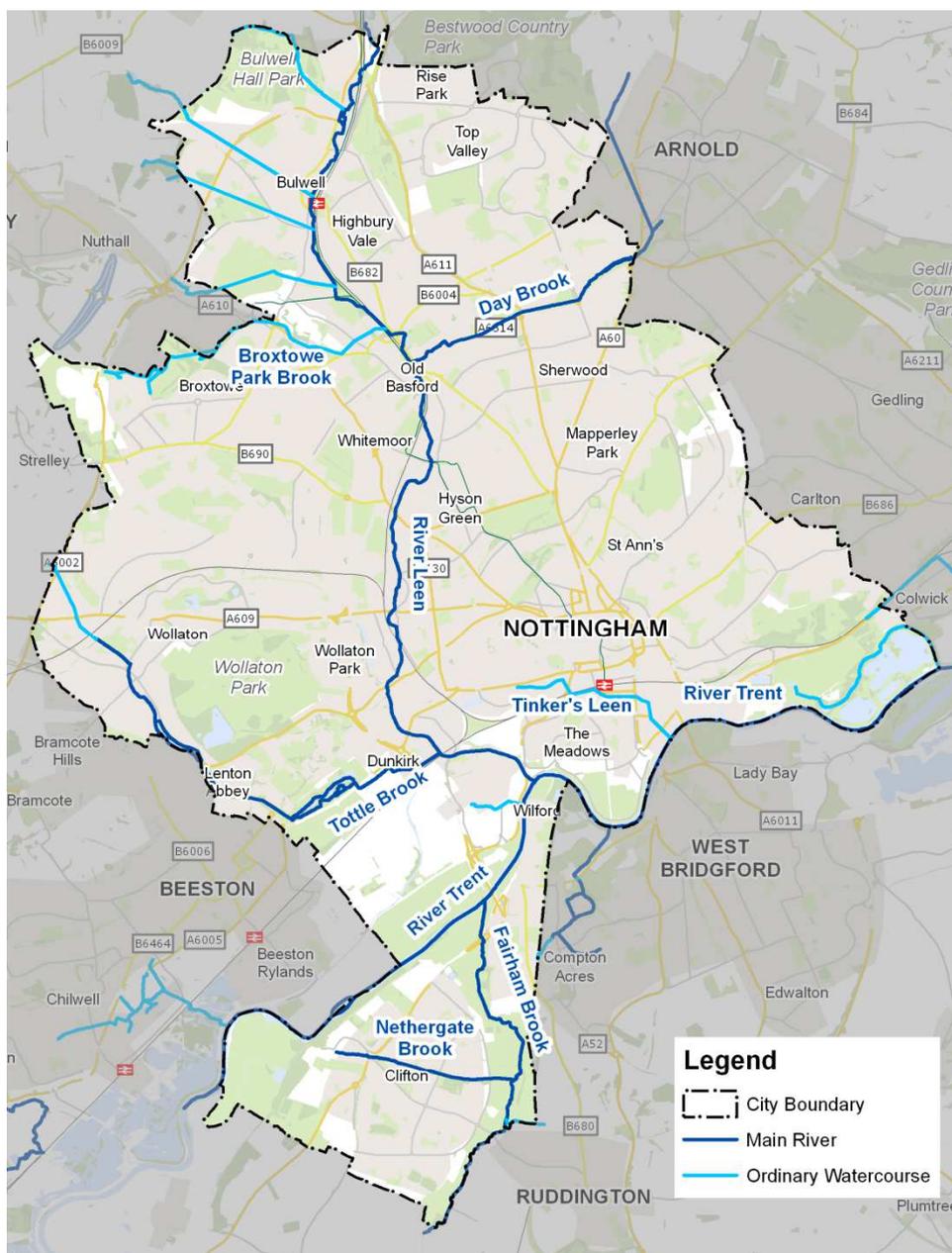


Figure 4-1: Nottingham City Council Geographical Setting

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NCC is the Lead Local Flood Authority (LLFA) (under section 9 of the Flood and Water Management Act 2010) working to produce a LFRMS under the Flood and Water Management Act (2010), the purpose being to guide the management of local flood risk across the county within the bounds of local circumstance. Whilst the strategy appreciates that the prevention of all flooding is not attainable, in accordance with the National Strategy for Flood and Coastal Erosion Risk Management, the Strategy will include the following:

- Information on local flood risk in Nottingham, highlighting where problems have already occurred, or where areas fall in risk categories;
- Clarification of which authority is responsible for what in relation to the prevention and management of flooding;
- Detail on the measures that will be undertaken to manage flood risk;
- Clarification on how work is prioritised;
- Measures that communities can undertake to improve flood resilience, as it is not possible to stop all flooding; and,
- Consideration of funding flood risk and investment planning.

The Strategy is a high level, statutory document which outlines the approach to limiting the impacts of local flooding within the NCC administrative area. The strategy promotes collaborative efforts between organisations responsible for managing local flood risk (the RMAs) and provides a strategic framework within which RMAs should work. The Strategy is a 'living document' which will be updated regularly in order to facilitate continual improvement.

4.1 Technical Scope

The primary focus of the Strategy is the management of 'local flooding sources' within the NCC administrative area in both the short and long term. The strategy is intended to document the work that the City Council intends to do to manage local flood risk now and in the future. It is a source of information for all individuals, communities and businesses prone to flooding in Nottingham City. It is also intended to be an information source for other authorities with flood risk management functions (RMAs) and other partners and stakeholders. The aforementioned 'local flooding sources' relates to: River flooding (ordinary watercourses), Surface water flooding, Highway flooding, Groundwater flooding, and integrated flooding. A summary of local flood risk within NCC administrative boundaries is provided in Section 7.

An important distinction is that flooding from Main Rivers and tidal sources is the responsibility of the Environment Agency and not directly subject to influence by the Strategy. However, it should be noted that the Strategy should also seek to ensure that local flood risk is not considered in isolation from

Main River and tidal flood risk and where possible it makes the link to the work of other agencies responsible for flood management.

The Strategy provides guidance on all sources of flood risk in the city of Nottingham in order to better understand the interactions and risk posed to communities which in turn will enable NCC to deliver management measures that provide the greatest benefit and resilience.

4.2 Relationship with other Flood Risk Plans and Assessments

The Strategy forms a key document in NCC's suite of flood risk management plans, drawing upon existing flood risk studies and consolidating the findings of such studies into a single document that outlines how local flood risk will be managed, as required by Section 9 of The Flood and Water Management Act 2010.

The EA and DEFRA jointly developed and published a National Flood and Coastal Erosion Risk Management Strategy⁵ (hereafter 'the National Strategy') for England in 2011. The National Strategy identifies the following six Guiding Principles for all LLFAs to follow in fulfilling their flood risk management activities:

- Community focus and partnership working;
- A catchment and coastal 'cell' based approach;
- Sustainability;
- Proportionate, risk-based approaches;
- Multiple benefits; and,
- Beneficiaries should be encouraged to invest in risk management.

The European Union Floods Directive (2007/60/EC)⁶ was transposed into UK law by the Flood Risk Regulations 2009⁷. Under the Regulations, NCC had a duty to undertake a Preliminary Flood Risk Assessment (PFRA), which was completed in 2011. The PFRA summarises flood risk within the City and is available on the City Council's website⁸.

A Local Development Framework (LDF) is a spatial planning strategy that comprises a suite of documents. Within Nottingham, the current Local Plan comprises the 'saved' Local Plan policies, which were adopted in November 2005. Work is currently underway to prepare a new Local Plan for Nottingham City. In the future the Local Plan will comprise of two Development Plan documents:

⁵ National Flood and Coastal Erosion Risk Management Strategy <https://www.gov.uk/government/publications/national-flood-and-coastal-erosion-risk-management-strategy-for-england>

⁶ European Union Floods Directive 2011 <http://floods.jrc.ec.europa.eu/eu-floods-directive>

⁷ The Flood Risk Regulations 2009 <http://www.legislation.gov.uk/ukxi/2009/3042/made>

⁸ NCC PFRA <http://www.nottinghamshire.gov.uk/enjoying/countryside/flooding/lead-local-flood-authority/pfra/>

The Nottingham City Aligned Core Strategy (ACS) sets out strategic planning policies and development principles for Nottingham City to guide development until 2028. The ACS is being jointly prepared with Broxtowe and Gedling Borough Councils with close alignment to the Core Strategies of other Councils that make up Greater Nottingham, namely Erewash and Rushcliffe Borough Councils. The ACS is currently in draft and at the Examination Stage.

The Nottingham City Land and Planning Policies Development Plan Document sets out planning policies which will guide how decisions on planning applications will be made in the future. It also includes potential sites for new development. The preferred option version of the LAPP has recently been consulted upon.

Both of these planning policy documents include policies on flood risk management in new developments, in particular outlining the flood risk constraints to individual sites and the use of Sustainable Drainage (SuDS). The policies provide a framework for ensuring sustainable development on flood risk and water quality grounds.

Two Strategic Flood Risk Assessments (SFRAs) were undertaken as part of the evidence base for the Local Development Framework. These SFRAs cover the River Leen & Day Brook catchments and the Greater Nottingham area and aim to direct strategic development towards the areas of least flood risk. Where there are overriding reasons for developing in a flood risk area, the SFRAs present flood risk management measures that would be required for the development to be at a low risk of flooding. The SFRAs also include policies on sustainable development that have informed the planning policies included in the Local Plan documents.

4.3 Aim, Objectives and Measures

The overarching aim of the Strategy is to reduce the impact of flooding on people, property and businesses in Nottingham. This will be achieved by facilitating a better understanding, communication and management of flood risk within the City of Nottingham through sustainable and coordinated approaches for the benefit of the following receptors which may be affected by the outcomes of the strategy now or in the future:

- Biodiversity;
- Cultural, Architectural and Archaeological heritage;
- Human health;
- Landscape;
- Materials assets;

- Landscape;
- Water; and,
- The interrelationships between the above factors.

NCC’s objectives for future local flood risk management have been developed by taking into account the historic and predicted future flood risk, the EA’s national objectives for flood risk management and objectives and aims set out in complimentary plans and strategies.

The NCC Strategy has 7 objectives each with measure(s) to facilitate the delivery of each objective, as detailed in Figure 4-2 below:

Local Flood Risk Management Aim: Reduce the impact of flooding on people, property and businesses in Nottingham	
Objective 1: Work collaboratively with partners	Work collaboratively with Risk Management Authorities and stakeholders to deliver effective maintenance, understand flood risk, to jointly invest in schemes and share expertise.
Objective 2: Sustainable new developments	Ensure that new development is sustainable, is not at risk of flooding and does not increase flooding elsewhere. Promote the use of Sustainable Drainage Systems to manage water quality, water quantity and biodiversity improvements.
Objective 3: Economically sustainable activities	Deliver cost-effective, proportionate and risk-based flood risk management schemes and maintenance activities.
Objective 4: Community education & engagement	Educate and engage with communities and politicians to raise awareness of flood risk, resilience measures, preparedness and riparian responsibilities.
Objective 5: Multiple benefits	Promote flood risk management activities that consider climate change, enhance the natural environment, deliver blue-green infrastructure, improve water quality and provide biodiversity and amenity benefits.
Objective 6: Catchment based approach	Promote a joined-up and catchment-based approach to flood risk management whilst supporting the delivery of improvements to the water environment.
Objective 7: Local flood risk information	Further improve data, asset information and knowledge of current and future local flood risk using a risk-based approach.

Figure 4-2. NCC’s LFRMS Objectives.

5 SUSTAINABILITY CONTEXT

5.1 Introduction

Sustainability as defined by the Brundtland Report⁹ is "development which meets the needs of current generations without compromising the ability of future generations to meet their own needs" and encompasses social justice, environmental responsibility and economic viability. It is therefore important that any plans and programmes do not adversely impact upon access to the natural environment. Moreover, measures should be taken to enhance access such as the reinstatement and/or implementation of green infrastructure to help promote the creation of wider green infrastructure at the regional, national and international level.

This section of the report outlines the key findings of the Scoping Report. It includes the outline review of the relevant plans, programmes and policies that inform the SEA and the Strategy, a summary of the baseline data and the SEA objectives and how they were developed.

5.2 Review of related plans, programmes and strategies

The SEA Directive requires that the SEA includes information on the relationship of the Strategy with other relevant policies, plans and programmes (Annex I (a)), as well as environmental protection legislation at international, national and local levels.

A review of these documents has been undertaken in order to identify any potential inconsistencies or constraints between these documents and the Strategy and to identify opportunities for environmental enhancement. Appendix A provides an inventory of the reviewed documents which were considered to have a bearing on the objectives of the Strategy and which were used to scope the SEA and subsequently feed into the development of the Strategy.

International

- EU Floods Directive (2007/60/EC) on the assessment and management of flood risks;
- EU Water Framework Directive (2000/60/EC);
- The Habitats Directive (92/43/EEC)¹⁰;
- The Birds Directive 2009/147/EC (codified version of 79/409/EEC)¹¹;
- The European Convention on the Protection of Archaeological Heritage (The Valetta Convention);

National

- Flood Risk Regulations (2009) (SI 3042);
- Flood and Water Management Act (2010);

⁹ Brundtland Report 1987 http://conspect.nl/pdf/Our_Common_Future-Brundtland_Report_1987.pdf

¹⁰ EU Habitats Directive http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

¹¹ The Birds Directive 2009 http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm

- National Flood and Coastal Erosion Risk Management (FCERM) Strategy for England (2011);
- Future Water – The Government’s Water Strategy for England (Defra, 2008)¹²;
- The Water Act 2003¹³;
- National Infrastructure Plan (2010)¹⁴;
- The Wildlife & Countryside Act (1981) as amended (most notably by the Countryside and Rights of Way (CROW) Act (2000)¹⁵;
- National Planning Policy Framework (2012)¹⁶;
- Securing the Future: UK Government Sustainable Development Strategy (2005)¹⁷;
- UK Biodiversity Action Plans¹⁸;
- National Heritage Protection Plan¹⁹;

Regional and Local

- River Trent Catchment Flood Management Plan (2009)²⁰;
- River Basin Management Plan Humber River Basin District (2009)²¹;
- NCC 'Biodiversity Position Statement: Ambitious for Wildlife' (2011)²²;
- Nottingham City Council (2014) Nottingham City Surface Water Management Plan;
- Nottingham City Council, Gedling Borough Council, Broxtowe Borough Council (2012) Aligned Core Strategy²³;
- Nottingham City Council (2012) Urban Forestry Strategy;
- Nottingham City Council (2011) Local Transport Plan²⁴;
- Nottingham City Council (2011) Preliminary Flood Risk Assessment;
- Nottingham City Council (2011) Nottingham Community Climate Change Strategy 2012 – 2020;

¹² Future Water 2008 <https://www.gov.uk/government/publications/future-water-the-government-s-water-strategy-for-england>

¹³ The Water Act 2003 <http://www.legislation.gov.uk/ukpga/2003/37/contents>

¹⁴ National Infrastructure Plan 2010 <https://www.gov.uk/government/collections/national-infrastructure-plan>

¹⁵ CROW Act 2000 <http://jncc.defra.gov.uk/page-1378>

¹⁶ NPPF 2012 <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

¹⁷ Securing the Future: UK Government Sustainable Development Strategy (2005) <https://www.gov.uk/government/publications/securing-the-future-delivering-uk-sustainable-development-strategy>

¹⁸ UK BAP <http://jncc.defra.gov.uk/default.aspx?page=5155>

¹⁹ National Heritage Protection Plan <http://www.english-heritage.org.uk/professional/protection/national-heritage-protection-plan/>

²⁰ River Trent Catchment Flood Management Plan 2009 <https://www.gov.uk/government/publications/river-trent-catchment-flood-management-plan>

²¹ River Basin Management Plan Humber River Basin District (2009) <https://www.gov.uk/government/publications/river-basin-management-plan-humber-district>

²² NCC's Ambitious for Wildlife (2011)

<http://open.nottinghamcity.gov.uk/comm/download3.asp?dctype=inline&filename=49256/BiodiversityPositionStatementfinal181011.pdf>

²³ Nottingham City Council, Gedling Borough Council, Broxtowe Borough Council (2012) Aligned Core Strategy <http://www.broxtowe.gov.uk/CHttpHandler.ashx?id=24916&p=0>

²⁴ NCC Local Transport Plan (2011) <http://www.nottinghamshire.gov.uk/travelling/travel/plansstrategiesandtenders/local-transport-plan/>

- Nottingham City Council (2010) Greater Nottingham Outline Water Cycle Study;
- Nottingham City Council / Environment Agency (2008) Greater Nottingham Strategic Flood Risk Assessment;
- Nottingham City Council / Environment Agency (2008) River Leen & Day Brook Strategic Flood Risk Assessment; and,
- Nottingham City Council River Leen Access and Biodiversity Study²⁵.

Whilst the current review concentrated upon policies, plans and programmes that are most relevant to flood risk management and to the implementation of the Strategy, care was taken to acknowledge considerations made to the preservation of the historic environment. For example:

- The National Planning Policy Framework recognises that the protection and enhancement of the historic environment is integral to achieving sustainable development;
- The Flood Risk Regulations 2009 include a requirement to have regard to the desirability of reducing the adverse consequences of flooding for the environment (including cultural heritage);
- The Flood and Water Management Act 2010 includes a requirement for local planning authorities, highway agencies and Internal Drainage Boards to contribute towards sustainable development when exercising their flood and coastal erosion risk management functions. Supporting guidance on this duty includes, within its definition of sustainable flood and coastal erosion risk management, improving the resilience of the natural, historic, built and social environment to current and future risks, as well as protecting natural and heritage assets and enhancing the environment where it is most degraded; and,
- The National Flood and Coastal Erosion Risk Management Strategy for England includes a guiding principle on achieving multiple benefits, such as enhancing and protecting the built, rural and natural environments, cultural heritage and biodiversity and in all instances flood and coastal risk management should avoid damaging the environment, including the historic environment.

5.3 Water Framework Directive (WFD) Assessment

The European Water Framework Directive (WFD) 2000/60/EC, which was transposed into UK law in 2003 by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003, represents a strategic planning process to manage, protect and enhance the condition of water bodies.

²⁵ Nottingham City Council River Leen Access and Biodiversity Study
http://gossweb.nottinghamcity.gov.uk/bigdownloads/riverleen.pdf?bcsi_scan_E956BCBE8ADBC89F=0&bcsi_scan_filename=riverleen.pdf

It establishes a framework for the protection of water bodies including terrestrial ecosystems and wetlands directly dependent on them.

Plans and strategies which could influence water body condition should consider WFD objectives. Although a formal WFD assessment (WFDa) is not a statutory requirement of the Strategy, WFD requirements are being considered as part of the SEA process, including where opportunities to improve WFD status exist.

Identification of Key Themes

The main themes and objectives from the policies, plans and programmes review that are considered relevant to the Strategies are presented below:

- Reduce and manage the risks of flooding;
- Adapt and mitigate the impacts of climate change;
- Promote a strong and diverse economy;
- Promote sustainable, healthy and safe communities;
- Protect and enhance the quality, extent and character of open and green spaces, natural environments and waterways;
- Conserve flora and fauna and their habitats;
- Halt overall biodiversity loss;
- Improve water quality so all Heavily Modified waterbodies achieve 'good ecological potential' as set out in the Water Framework Directive;
- Provide an efficient, effective and robust transport system;
- Protect cultural, architectural and archaeological heritage assets including conservation areas and built heritage; and
- Promote sustainable growth.

The themes and objectives identified will provide an input into the process of identifying key issues and opportunities in the development and refinement of the SEA objectives.

5.4 Green Infrastructure Plans

Green infrastructure can provide a variety of social, economic and environmental benefits. Green Infrastructure Plans provide a framework to deliver the integration of a number of functions often into multifunctional resource, these may include, improved flood risk management, provision of open space, climate change adaptation and biodiversity enhancement.

Green Infrastructure can be delivered at a national, regional or local scale by spatial and strategic planning.²⁶

²⁶ <http://www.naturalengland.org.uk/ourwork/planningdevelopment/greeninfrastructure/default.aspx>

6 SEA BASELINE INFORMATION

6.1 Introduction

The SEA Directive states that the baseline data within the Environment Report should include:

- Relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme;
- The environmental characteristics of areas likely to be significantly affected; and,
- Any existing environmental problems which are relevant to the plan or programme including European sites for nature conservation.

The SEA Directive outlines aspects of the environment that must be considered as individual topics. However, if there are unlikely to be any significant effects upon a particular environmental receptor, as a result of the Strategy, it is possible to scope the topic out of the assessment.

6.2 Summary of Flood Risk in the City of Nottingham

As an urban area Nottingham City has vast expanses of paved areas which can result in the accumulation of surface water in low lying areas and reduced lag times which ultimately contributes to flooding. The urban nature of the area means that it is not possible to consider 'local' flood risk (i.e. ordinary 'minor' watercourses, surface water and groundwater) in isolation due to the interaction with other water bodies such as sewers and Main (major) Rivers. As such the Strategy focuses on local flood risk in the context of a wider setting which promotes a collaborative and holistic approach to managing all flood risk within the City by working with RMAs who have different flood risk management functions for different sources of flooding.

The topography of the area is varied, ranging from the flat expanses of the River Trent floodplain to the moderate and steep gradients of Mapperley Park, Top Valley and Sherwood. These areas of steep topography are a further contributing factor to surface water flooding in the City. The majority of the city is underlain by a major aquifer that carries potable groundwater. Some areas of the city including that of Old Basford and Sneinton are subject to water ingress into cellars and waterlogged land as a result of a high groundwater table.

A brief overview of the most common types of flooding faced in the City of Nottingham is provided below:

A main flood source in Nottingham is **Main River flooding**. The River Trent responds slowly to rainfall allowing flood warnings to be relayed. However, the River Leen (a 15 mile long tributary of the River Trent) is an urban watercourse which responds rapidly to rainfall and therefore limits the ability to deliver prompt flood warnings. In Nottingham Main Rivers (i.e. watercourses which have strategic flood risk importance) include the River Trent, River Leen, Day Brook, Tottle Brook, Fairham Brook and Nethergate Brook. The EA is responsible for managing Main River flood risk.

Ordinary Watercourses are defined as smaller watercourses which do not comprise a Main River. There are a number of these within the City and these include: Broxtowe Park Brook, the upstream reaches of Tottle Brook, Robins Wood Dyke and Tinkers Leen. NCC is responsible for managing flood risk posed by Ordinary Watercourse Flood Risk.

As aforementioned **surface water flooding** has significant impacts in urban areas such as Nottingham and the management of surface water flooding is perhaps where NCC can have the greatest effect in reducing flood risk to citizens. **Highway flooding** is similar to surface water flooding and is currently being minimised by a proactive approach to annual gully maintenance in known areas of flood risk areas.

As a result of declining water-intensive industries in Nottingham, **groundwater** levels are recovering to natural a level which has resulted in the aforementioned ingress of water into land which was developed during a time when groundwater levels were artificially lowered. Groundwater flooding may also arise from the formation of springs and issues at historical locations which were originally depressed from water abstraction. Such locations can lead to local minor flooding and is often well-known to the local area. Artificially lowering groundwater is not a sustainable option for flood risk management. In the unlikely event that groundwater were to rise above the land surface the Council would be responsible for managing this flood risk.

The risk of **Sewer flooding** varies widely across the City dependent upon both capacity and condition of assets. Severn Trent Water is responsible for managing flooding from the public sewerage network. **Burst water mains** can also result in localised flooding; this type of flooding can cause major damage to high capacity/pressure water pipes, whilst **combined sewer** overflows also have the potential to impact upon both water quality and the water environment.

Wollaton Park Lane is a large **reservoir** which is categorised as high risk due to the number of properties at risk of flooding if the dam were to fail.

Canal Flooding is controlled in the City by the use of locks and weirs which ultimately means that the risk of flooding is low. The Canal and River Trust is responsible for managing flood risk for canals.

Integrated flooding must also be considered wherein two or more flood sources interact.

Priority Flood Risk locations

Following the NCC PFRA the Nottingham City Surface Water Management Plan was undertaken in 2011 (as part of the Surface Water Management Plan) and updated in 2014, identifies priority areas based on flood risk. A risk-based approach enabled seventeen 'local flood hotspot areas' to be identified based on the number of properties at risk of flooding, historic flooding records and social deprivation.

6.3 Summary of Baseline Information

During the scoping phase, data was collected for each of the 'scoped-in' topics' to determine the significance of the potential impacts arising as a result of the implementation of the Strategy. Where possible, data was collected which is able to show both spatial and temporal trends. This allowed for a more informed judgement of the current situation in terms of the sustainability baseline of certain areas relative to others. The SEA Directive outlines aspects of the environment that must be considered. However, if there are unlikely to be any significant effects upon a particular environmental receptor as a result of the Strategy it is possible to scope the topic out of the assessment.

One of the issues identified in the SEA Regulations is climatic factors and this is taken to refer to potential effects of the implementation of the Strategy on the climate. Given that flood risk is driven by the climate rather than having an effect on the climate, it is considered that the topic of climate is not relevant to the issues relating to the Strategy and can therefore be scoped out of the assessment. The potential effects of climate change such as extreme weather and flooding will of course be addressed under the appropriate topic headings, such as material assets and water.

The following SEA topics are also considered unlikely to be significantly affected by the Strategy and it is therefore proposed to scope them out of the assessment:

Air - The Strategies do not yet include objectives or measures that are envisaged to give rise to activities that emit greenhouse gases or other pollutants. The effects upon air quality have therefore been excluded. However, if specific measures or plans were proposed which may have an adverse impact upon air quality an EIA would be required;

Soils – within the context of the city of Nottingham it is considered unlikely that there will be significant effects upon soils. The effects on soils have therefore been excluded.

Population - Although there is the potential for some individuals to be affected by the implementation of the Strategy it is unlikely that the wider population will be significantly directly affected. Effects relating to topic areas that are linked to population, such as flood risk, human health and material assets have been assessed.

The baseline data collected during the scoping stage is provided in Appendix B and a summary of baseline data is provided in Table 6-1.

Table 6-1: Summary of the NCC Baseline	
Receptor	Summary of Baseline Data
Biodiversity	<ul style="list-style-type: none"> The city has over 350ha (111 sites) of natural and semi natural area including woodlands, river corridors and postindustrial land. Total open spaces span 1,920ha (25.7% of the city) 3 Nationally Important Sites of Special Scientific Interest (SSSIs) including Colwick Cutting and Holme Pit 62 geological and biological Local Wildlife Sites (former SINCs) covering 670ha 13 Designated Local Nature Reserves (LNRs) including Colwick Woods, Beeston Sidlings and Bulwell Hall Park Meadows Around 14% of Nottingham is covered by trees with 100ha of woods <i>Within urban areas like Nottingham the pressures upon green space and areas of wildlife value will increase as demand and development increases.</i>
Cultural, Architectural and Archaeological Heritage	<p>A map of scheduled Ancient Monuments and Listed Buildings is shown in Figure 6-1.</p> <ul style="list-style-type: none"> Nottingham has a rich and distinctive historic environment which makes a crucial contribution to the City's identity. Historic buildings, monuments, sites, areas and landscapes are an irreplaceable resource. The heritage of Nottingham includes: Nottingham castle, medieval city walls, caves and parks and gardens. Within the city there are a wide variety of designated heritage assets There are 800 listed buildings including 9 grade I listed buildings and 34 listed at grade II* There are 31 Conservation areas There are 10 scheduled ancient monuments including: the Cellar under 8 Castle Gate, Dovecote east of Home Farm, Rock cut houses north of Castle Boulevard, Rock cut houses south of Nottingham Castle, caves at Drury Hill, Caves under 3-7 Middle Pavement, medieval City Wall, Nottingham Castle, St. John Baptist's Church and graveyard (Colwick) and Lenton Priory Nottingham has more artificial caves than any other British City. There are 550 caves listed in the City Council's Historic Environment Record. These caves have existed since Saxon times and are unique features nationally, providing important heritage assets which complement development,

Table 6-1: Summary of the NCC Baseline

Receptor	Summary of Baseline Data
	<p>encourage tourism and provide research opportunities.</p> <ul style="list-style-type: none"> • Within the City of Nottingham there are 9 entries on English Heritage's Register of parks and Gardens of Special Historic Interest in England, including the Arboretum, Memorial Gardens at Trent Embankment and the General Cemetery. • Some heritage assets are likely to be at risk of flooding, this has the potential to compromise their inherent value. • There are many undesignated sites which are important to the historic fabric of Nottingham together with unknown archaeology further investigations will take place should specific flood risk options be taken on further. • <i>Any proposed flood alleviation measures have the potential to impact beneficially or adversely on Nottingham's historic environment.</i>
Human Health	<ul style="list-style-type: none"> • The health of the Nottingham population is generally below the national average • Deprivation is higher than average with 21,590 children living in poverty • Life expectancy for both men and women is lower than national average • NCC ranks 20th out of 326 districts in England in regards to the 2010 Index of Multiple Deprivation²⁴ • Over the last 10 years all-cause mortality rates have fallen • About 21.9% of Year 6 children are classified as obese • Levels of teenage pregnancy are higher than the national average • GCSE attainment is lower than the national average • The health and levels of deprivation amongst the Nottingham population is likely to continue to be worse than the national average • <i>Flooding can exacerbate or induce health related issues, particularly in regards to mental health and well-being.</i>
Material Assets	<ul style="list-style-type: none"> • The City's population is 308,700, expected to rise to 321,300 by 2021 ²⁷ <p>NCC has the following amenities:</p> <ul style="list-style-type: none"> • Infrastructure links including the railway, railway station, the tram system and the highway network • Elements of local government and the law system • Emergency services including hospitals, police and fire stations • Schools and higher education institutions • Water supply and sewerage • Energy and telecommunication • <i>It is likely that the material assets in Nottingham will continue to develop and thrive. With climate change this may put pressure upon land resources,</i>

Table 6-1: Summary of the NCC Baseline

Receptor	Summary of Baseline Data
	<i>reducing the flood risk alternatives and options available.</i>
Landscapes	<ul style="list-style-type: none"> • Nottingham has 990ha of open spaces within the city which vary significantly in quality and type. Whilst some are of high quality others suffer from a range of problems including poor access, vandalism and anti-social behavior, lack of maintenance resources and inappropriate location. In some areas, the type of provision does not meet identified needs. • NCC looks after 127 parks and gardens across the city, including: The Arboretum, Nottingham Castle, Wollaton Hall and Wollaton park lake, Newstead Abbey (outside of the City), Colwick Country Park, Highfields Lake, Forest recreation Ground, Woodthorpe Grange Park • NCC has 19 Green Flag award winning sites and 12 Community Green Flag awards • <i>Within urban areas like Nottingham the pressure upon open space and areas of recreational value will increase as demand and development increases.</i>
Water	<ul style="list-style-type: none"> • Nottingham has a Surface Water Management Plan (2014) and a Greater Nottingham Strategic Flood Risk Assessment (2008) • The Greater Nottingham SFRA identified fluvial flood risk within Nottingham City in the following areas: River Trent – City Centre, Lenton; Fairham and Nethergate Brook; Extensive flooding along the Leen corridor; additionally development upstream in Gedling and Hucknall can potentially increase flood risk if surface water fails to be managed. • <i>Local flooding can contribute to high levels of nutrients and pollutants in WFD waterbodies</i> • <i>Impacts upon surface water quality, groundwater quality and hydromorphology may arise as a consequence of future flooding or flood risk mitigation</i> • Careful, sensitive and innovative design is essential to enable sustainable solutions to be developed and delivered for the benefit of all • Sustainable solutions should include Sustainable Drainage Systems (SuDS) and innovative localized solutions such as the Nottingham Green Streets retrofit solutions and rain gardens. • River Leen & Day Brook SFRA (2008) identified that there is unlikely to be a single viable solution to the present flooding problems. Strategic use of SuDS on a catchment-wide basis is likely to reduce flood risk slightly from the River Leen.

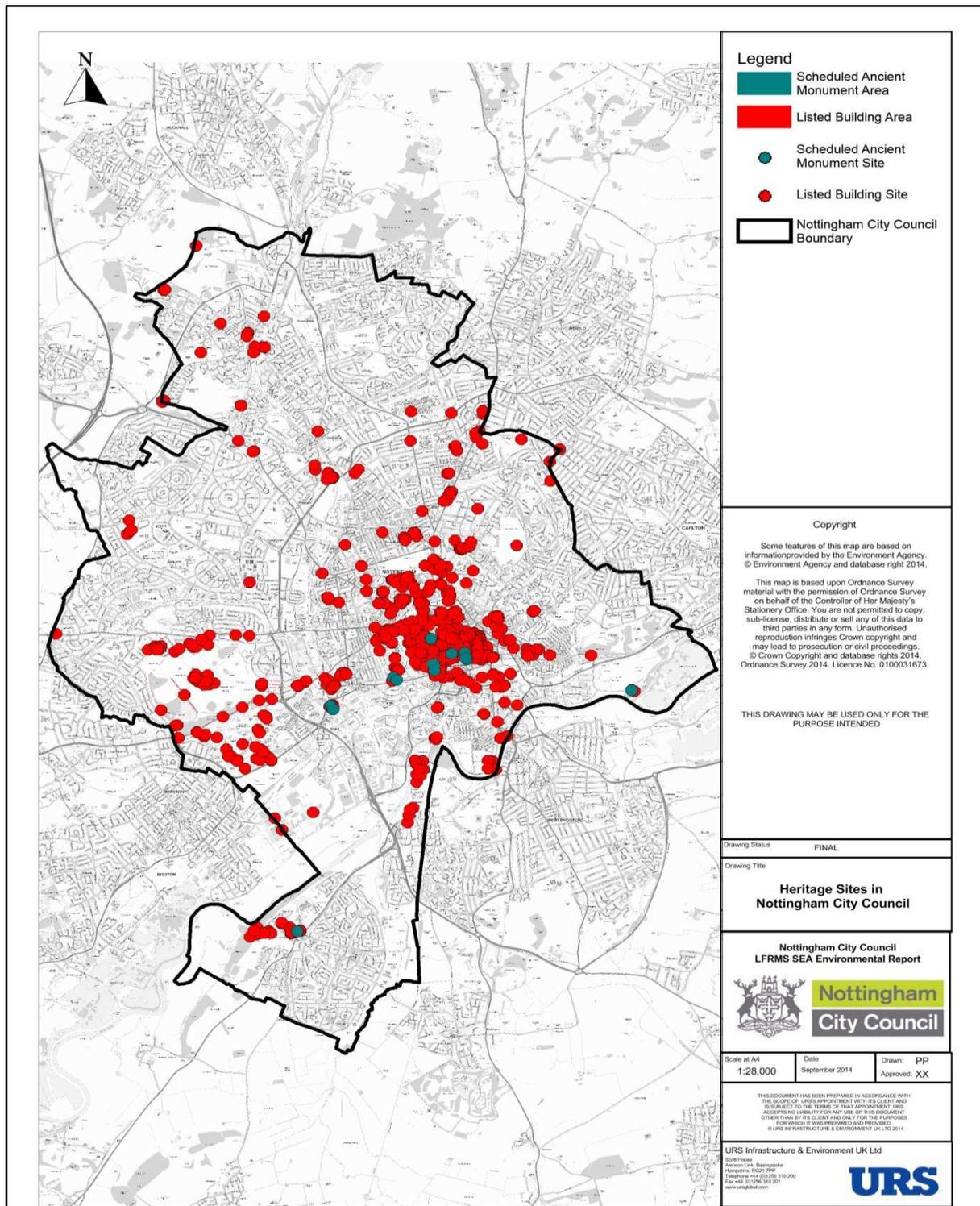


Figure 6 -1 Heritage Sites

6.4 Likely influence of the Strategy

The following subheadings detail how the Strategy may influence each receptor 'scoped in' to the SEA and how each receptor may be affected by a failure to implement the strategy, i.e. 'likely impact *without* the strategy'.

Biodiversity

Implementation of the Strategy at NCC may lead to the construction of flood management infrastructure, changing land use, changes in flood risk and changing water levels. These changes have the potential to adversely affect nature conservation efforts, lead to biodiversity loss and could alter landscape features. However, beneficial impacts could include new opportunities for habitat creation or the improvement of existing habitats. Subsequently this could lead to the preservation of biodiversity, including that of designated species and habitats and the development of new/improved landscape features. Failure to capitalise upon the potential advantages the strategy could result in habitat and biodiversity loss along with inundation of landscape features.

Cultural, Architectural and Archaeological Heritage

Delivery of Strategy objectives may lead to the construction of flood management infrastructure, changing land use, altered flood regimes, changing water levels and altered landscape features; all of which could adversely affect Nottingham's historical setting. For example altered flood regimes and water levels may result in groundwater flooding of sites with an artificially lowered water table. However, the successful delivery of the Strategy is likely to manage flood risk to heritage features and lead to improved quality and access of historic sites. Failure to implement the strategy may result in a reduced quality of heritage sites as a result flooding and its associated effects including erosion and weathering.

Human Health

The main aim of the Strategy is to reduce the impact of flooding on people, property and businesses in Nottingham. The strategy will aim to work collaboratively with various stakeholders to reduce flood risk and its associated impacts upon the population (including that of health and financial concerns). Public awareness will also be improved and aid in preparedness as a function of community integration.

Delivery of the strategy objectives may affect public access to recreational features, goods and public services that can make a material difference to their quality of life.

Failure to implement the strategy has the potential to expose communities to poor health and wellbeing as a function of stress and anxiety over flooding concerns and the aftermath of flooding.

More immediately after a flood event human health can be compromised acutely through exposure to contaminated water.

Materials Assets

The Strategy aims to manage, and where possible limit, the flood risk to critical infrastructure and material assets. The future implementation of the Strategy has the potential to disrupt critical transport infrastructure (including that of the rail, tram and highway network in Nottingham), waste management facilities, utilities including that of water and access to healthcare in the form of hospitals and health centres. In a bid to fulfil the overarching aim of the Strategy the location of such vital infrastructure may influence the strategy's deliverance, especially in the instance of the development of new infrastructure.

However, ultimately the strategy aims to protect Nottingham's material assets, infrastructure and services. Therefore failure to implement the strategy could result in a loss or temporary cessation of integral infrastructure and services including that of transport links.

Landscape

The implementation of the strategy may result in the construction of flood management infrastructure. This is likely to change flood frequency, water levels and may adversely affect landscape value and heritage. However, the strategy will also provide opportunities for enhancement of the local landscape through sympathetic landscape design. In addition the accessibility of such landscapes may improve and enhance the health and wellbeing of local residents who may benefit from cultural ecosystem services. Failure to implement the strategy could result in a compromised landscape and heritage due to flooding and its associated impacts.

Water

Construction, changes in water levels, water flow and flood risk has the potential to contaminate land and alter flood frequency. This could lead to chemical and physical changes in both ground and surface waters. Such changes may affect a waterbodies' ability to achieve and/or maintain a good ecological potential. However, it is more likely that the delivery of the Strategy objectives will benefit water quality.

Failure to implement the Strategy could result in compromised water quality and resources within the NCC district.

7 SEA APPROACH

This section of the environmental report sets out the SEA objectives. Changes to SEA objectives are outlined in section 3.1. in line with responses from the consultation process with statutory consultees. SEA objectives are used to determine the effects of The Strategy objectives upon core environmental receptors. This is then compared to a ‘do nothing’ approach as an alternative to the implementation of the Strategy.

7.1 SEA Objectives

Table 7-1 lists the final SEA objectives and the key topic issues from which they were derived. These objectives have been developed in consultation with Flood Risk Management Authorities.

Table 7-1. SEA Objectives and Associated Key Topic Issues.	
SEA Objective	Key Topic Issues
<i>Human Health & Population</i>	
<p>1. Protect and enhance human health and wellbeing</p> <p>2. Raise awareness and understanding of local flooding and its dangers</p>	<ul style="list-style-type: none"> • Drowning, injuries, falls, respiratory disease, shock hypothermia and cardiac arrest • Contact with polluted waters and damp conditions leading to infections, illness and the spread of serious waterborne diseases • Perceived level of flood risk and fear of flooding • Physical and emotional stress due to loss of property, evacuation and disturbances as a result of injury.
<i>Biodiversity and geodiversity</i>	
<p>3. Protect, conserve and enhance biodiversity, wildlife corridors, habitats and geodiversity</p>	<ul style="list-style-type: none"> • Protect (if appropriate) biodiversity and geodiversity, designated and non-designated sites from local flooding • The opportunity to create new habitats, either through mitigation or design and via green infrastructure initiatives • Irreversible changes to the hydrological balance of habitats as a result of change in land use associated with mitigation or design • Moving of flood risk or enhancing flood risk to another area • Surface water management via SUDs

	<ul style="list-style-type: none"> • Management of invasive/non-native species
Water	
<p>4. Protect and enhance the water quality and hydromorphology of watercourses, WFD waterbodies and groundwater.</p>	<ul style="list-style-type: none"> • All waterbodies must reach good ecological status by 2027 • Local flooding can contribute to high levels of nutrients and pollutants in WFD waterbodies • Impacts upon surface water quality, groundwater quality and hydromorphology as a consequence of future flooding or flood risk mitigation
<p>5. Promote sustainable flood risk management</p>	<ul style="list-style-type: none"> • Careful, sensitive and innovative design so sustainable solutions can be developed to the benefit of all • Sustainable solutions to include Sustainable Drainage Systems and innovative localised solutions e.g. Nottingham Green Streets retrofit solutions and rain gardens, • Align with County Council flood risk management strategy. • Develop Green Infrastructure
Material Assets	
<p>6. Minimise the risk of flooding on existing and future key assets, infrastructure, homes and businesses</p>	<ul style="list-style-type: none"> • Severe disturbance to communities including impassable roads, residential and business property flooding, and school closures • Reduced access to services including water, power and telecommunications
<p>7. Manage and mitigate the future effects of climate change in new and existing development</p>	<ul style="list-style-type: none"> • Maximise the positive benefits on business and availability of land. • Emphasise the positive benefits that sustainable development can make to economic and social development • Location of future development can increase local flood risk elsewhere • Spread of contaminants or harmful debris from waste management sites • Climate change is predicted to increase frequency and severity of flooding in the future, further exacerbating other key topic issues • Surface water management via SUDs

<i>Cultural, Archaeological & Architectural Heritage</i>	
<p>8. Conserve and enhance the historic environment, heritage assets and their settings</p>	<ul style="list-style-type: none"> • Some heritage assets are likely to be at risk of flooding, and/or are reliant on water levels/flow • Measures may negatively impact the historical landscape, while protecting a particular asset
<i>Landscape & Townscape</i>	
<p>9. Protect, conserve and enhance the quality, character and availability of open spaces and natural resources</p>	<ul style="list-style-type: none"> • Potential damage and reduced access to national and locally important open spaces, parks and recreation areas • The protection of biodiversity, designated and non-designated sites from local flooding • Irreversible changes to the hydrological balance of habitats as a result of change in land use associated with mitigation or design

7.2 Proposed Methodology and Assessment Approach

Each objective of the Strategy will be ‘tested’ against the above SEA objectives to determine whether the objectives of the Strategy will in fact deliver a sustainable approach to flood risk management. For example Objective 1 of the Strategy is to ‘Work Collaboratively with Partners’, this objective will be tested against the SEA objectives to determine the impacts of collaborative working upon: Human health and Population; Biodiversity; Water; Flood Risk Management; Material Assets; Cultural, Archaeological & Architectural Heritage and Landscape and Townscape.

This assessment will be conducted via the use of matrices which will highlight the likely impacts of the objectives and measures of the strategy upon the environment. The impacts are determined by considering the following:

- Whether the impact is **adverse or beneficial**;
- The **magnitude** of the potential impact;
- Whether the impact is **secondary, cumulative and/or synergistic**;
- Whether the impact results **directly or indirectly** from the Strategy objectives and measures;
- The **spatial extent** (local, regional or national);
- The **timescale**
 - Short term – expected in the next 1-5 years;
 - Long term – expected in the next 5+ years; and,
- The **permanence** and **reversibility** (permanent or temporary & reversible or irreversible).

Table 7-2 shows the 'scores' which will be allocated to the Strategy objectives. Where it has been considered that 'no relationship' exists between the Strategy objective and SEA objective this does not mean that there is no potential for impacts to arise in the future. A score of no relationship indicates that further information would be required on how and where measures are to be developed (information which is not available at the strategic level).

Table 4	
7-2 : Strategy objective impacts description	
Type of Impact	Description
Direct	An impact on one or more SEA objective may occur as a primary function of the implementation of a particular Strategy objective – a primary beneficial or adverse impact.
Indirect	An impact on one or more SEA objective may occur as a secondary function of the implementation of a particular Strategy objective – a secondary beneficial or adverse impact.
Major positive (++)	Significantly beneficial to the SEA objective – Multiple opportunities for environmental improvement or resolves existing environmental issue.
Minor positive (+)	Partially beneficial (not significant) to the SEA objectives – Contributes to resolving an existing environmental issue or offers some opportunities for improvement.
No relationship / Neutral (N)	Neutral effect on the SEA objective and environment.
Uncertain (?)	Insufficient detail on the option or baseline – Cannot effectively assess the significance of the Strategy objective on the SEA objective.
Minor negative (-)	Partially undermines (not significantly) the SEA objective – Option would contribute to an environmental issue or reduce opportunities for improvement.
Major negative (- -)	Significantly undermines the SEA objective – Will significantly contribute to an environmental problem or undermine opportunity for improvement.

8 ASSESSMENT OF STRATEGY OBJECTIVES AND ALTERNATIVES

8.1 Introduction

This section assesses the Strategy objectives against the SEA objectives. Additionally alternative strategy objectives are proposed and tested against the SEA objectives. Cumulative effects upon receptors are also considered, firstly as a result of implementing the various Strategy objectives and secondly as a result of implementing Strategy objectives alongside other plans, programmes and strategies.

The Strategy objectives are tested against the SEA objectives to:

- Ensure compatibility;
- Identify the nature of any potential environmental impacts (positive, negative or neutral); and,
- Identify the significance of any potential environmental impacts (major or minor).

As listed in Section 5.3 the NCC Strategy objectives are to:

1. Work collaboratively with Risk Management Authorities and stakeholders to deliver effective maintenance, understand flood risk, to jointly invest in schemes and share expertise;
2. Ensure that new development is sustainable, is not at risk of flooding and does not increase flooding elsewhere. Promote the use of Sustainable Drainage Systems to manage water quality, water quality and biodiversity improvements;
3. Deliver cost-effective, proportionate and risk-based flood risk management schemes and maintenance activities;
4. Educate and engage with communities and politicians to raise awareness of flood risk, resilience measures, preparedness and riparian responsibilities;
5. Promote flood risk management activities that consider climate change, enhance the natural environment, deliver blue-green infrastructure, improve water quality and provide biodiversity and amenity benefits;
6. Promote a joined-up and catchment-based approach to flood risk management whilst supporting the delivery of improvements to the water environment; and,
7. Further improve data, asset information and knowledge of current and future local flood risk using a risk-based approach.

Each Strategy objective has a number of associated measures or 'actions' as outlined by NCC's LFRMS Action Plan. A broad overview of the actions associated with each objective is shown in table 8-1. Due to the number of actions and their varying statuses it has been considered inappropriate to

assess each individual action against each SEA objective. However, the actions and their potential impacts upon the environment will be considered when determining the overall impact each Strategy objective upon the environment. A more comprehensive assessment will be undertaken when considering the 'targeted actions' as they are more likely to have a direct effect upon the local environment and reference will be made to these actions in Section 8.3.1.

Table 8-1. NCC LFRMS Action Plan Overview.

Actions	Relevant Strategy Objectives
Broad Actions	
Legislation/Statutory Duties	
Develop a LFRMS	All
Lead on investigations into flooding incidents that meet local thresholds	1,3,4,5,6,7
Develop a robust register of flood risk management assets and features to replace the interim register	1,3,7
Continue to support the work of the Development Management, Regeneration and Planning Policy teams and the Seven Trent Water and the Environment Agency to ensure that development is sustainable on flood risk grounds	1,2,5,6
Identify and designate features that may have a significant impact on flood risk	1,4,7
Make preparations for the implementation of Sustainable Drainage Systems Approving Body (SAB), pending an announcement from Defra.	1,2,5
Asset Management	
Continue to implement the recommendations of the Urban Highway Drainage Good Practice Guide, including asset data collection and condition surveys, electronic records of maintenance and flooding and a targeted risk-based approach to maintenance regimes.	1,3,6,7
Continue to clear watercourse trash screens proactively and reactively, informed by telemetry systems.	3,7
Implement and record a cyclical programme of asset inspections, including CCTV surveys, asset data improvements and site inspections.	1,3,5,6,7
Community Engagement	
Working in partnerships with RMAs, develop a prioritized and targeted community engagement strategy with at risk communities.	1,3,4
Investigate options for entering into partnerships with suppliers to support communities in protecting their own properties by obtaining self-help measures at a lower cost.	1,3,4,5

<i>Targeted Actions – Nottingham Medium Term Plan (Capital Investment Scheme)</i>	
Broxtowe Park Brook, Nuthall: Capital Maintenance and Flood Alleviation Scheme <ul style="list-style-type: none"> - Silt removal and silt management - Modelling, mapping and flood risk management option development - Design, construction and delivery flood risk management scheme 	<p>1,3,5 1,3,4,5,6,7 3,5,6</p>
Tottle Brook, Wollaton: Flood Alleviation Scheme <ul style="list-style-type: none"> - Modelling, mapping and flood risk management option development - Design, construction and delivery flood risk management Scheme 	<p>1,3,4,5,6,7 3,5,6</p>
Colman Close, Top Valley: Surface Water Management Scheme <ul style="list-style-type: none"> - Modeling, mapping and flood risk management option development - Design, construction and delivery flood risk management scheme 	<p>1,3,4,5,6,7 3,5,6</p>
Day Brook Flood Alleviation Scheme <ul style="list-style-type: none"> - Catchment-Based Approach scoping study - Modelling, mapping and flood risk management option development - Design, construction and delivery flood risk management scheme 	<p>1,2,3,4,5,6,7 1,3,4,5,6,7, 3,5,6</p>
City-wide Industrial Property Level Protection Programme <ul style="list-style-type: none"> - Deliver Property Level Protection to approximately 70 properties across the City between 2015/6-2021/22 	<p>1,3,4</p>
Mapperley Park Surface Water Management Scheme <ul style="list-style-type: none"> - Modelling, mapping and flood risk management option development - Design, construction and delivery flood risk management scheme 	<p>1,3,4,5,6,7 3,5,6</p>
River Leen, Bobbers Mill Flood Alleviation Scheme <ul style="list-style-type: none"> - Modelling, mapping and flood risk management option development - Design, construction and delivery flood risk management scheme 	<p>1,3,4,5,6,7 3,5,6</p>
Woolington Close, Strelley: Surface Water Management Scheme <ul style="list-style-type: none"> - Modelling, mapping and flood risk management option development - Design, construction and delivery flood risk management scheme 	<p>1,3,4,5,6,7 3,5,6</p>

8.2 Developing Strategic Alternatives

To ensure that the assessment and the SEA process in general is fair and informed, a ‘do nothing’ alternative has been devised (i.e. what impact would there be on the SEA objectives and the environment as a whole if the Strategy Objectives were not implemented). For example by not implementing Objective 4: Community education and engagement, an adverse impact may result and

SEA objective *Raise awareness and understanding of local flooding and its dangers* would not be met.

The results of the assessment of Strategy objectives against SEA objectives can be found in Table 8-2.

Table 8-2. Assessment of Strategy Objectives Against SEA Objectives.

			SEA Objectives									
			1	2	3	4	5	6	7	8	9	
			Protect and enhance human health and wellbeing	Raise awareness and understanding of flooding and its dangers	Protect, conserve and enhance biodiversity, wildlife corridors habitats and geodiversity	Protect and enhance the water quality and hydromorphology of watercourses, WFD waterbodies and groundwater	Promote sustainable flood risk management	Minimise the risk of flooding on existing and future key assets, infrastructure, homes and businesses	Manage and mitigate the future effects of climate change in new and existing development	Conserve and enhance the historic environment, heritage assets and their settings	Protect, conserve and enhance the quality, character and availability of open spaces and natural resources	
Strategy Objectives	Collaborative working	Work collaboratively with Risk Management Authorities and stakeholders to deliver effective maintenance, understand flood risk, to jointly invest in schemes and share expertise.	Short term	Indirect +	Direct ++	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +
		Long term	Indirect +	Direct ++	Indirect +	Indirect +	Indirect +	Indirect +	Indirect ++	Indirect +	Indirect +	
	Sustainable new developments	Ensure that new development is sustainable, is not at risk of flooding and does not increase flooding elsewhere. Promote the use of Sustainable Drainage Systems.	Short term	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Direct ++	Indirect +	Indirect +	Indirect +
			Long term	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Direct ++	Indirect ++	Indirect +	Indirect +
	Economically sustainable	Deliver cost-effective, proportional and risk-	Short term	Indirect +	Indirect +	Indirect +	Indirect +	Direct ++	Indirect +	Indirect +	Indirect +	Indirect +

	activities	based flood risk management schemes and maintenance activities.	Long term	Indirect +	Indirect +	Indirect +	Indirect +	Direct ++	Indirect +	Indirect +	Indirect +	Indirect +
	Community education and engagement	Educate and engage with communities and politicians to raise awareness of flood risk, resilience measures, preparedness and riparian responsibilities.	Short term	Indirect ++	Direct ++	Indirect +	Indirect +	Direct ++	Indirect ++	Indirect +	Indirect +	Indirect +
			Long term	Indirect ++	Direct ++	Indirect +	Indirect +	Direct ++	Indirect ++	Indirect +	Indirect +	Indirect +
	Multiple benefits	Promote flood risk management activities that consider climate change, enhance the natural environment, improve water quality and provide amenity benefits.	Short term	Indirect +	Indirect +	Indirect ++	Indirect ++	Direct ++	Indirect ++	Indirect ++	Indirect +	Indirect +
			Long term	Indirect +	Indirect +	Indirect ++	Indirect ++	Direct ++	Indirect ++	Indirect ++	Indirect +	Indirect +
	Catchment based approach	Promote a joined-up and catchment-based approach to flood risk management.	Short term	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +
			Long term	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +
	Local flood risk information	Further improve data, asset information and knowledge of current and future local flood risk using a risk-based approach.	Short term	Indirect +	Direct ++	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +
			Long term	Indirect +	Direct ++	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +	Indirect +

8.3 Assessment Objectives

8.3.1 Assessment Summary

The assessment of the compatibility between SEA objectives and the Strategy objectives suggests that all of NCC's LFRMS objectives will have a positive impact upon the environment. The majority of the Strategy objectives will have minor, indirect yet positive impacts. The remaining impacts are either direct or indirect major positive impacts.

Below a brief summary of the compatibility between SEA and Strategy objectives is given.

SEA Objective: Protect and Enhance Human Health and Wellbeing

Each of the Strategy objectives was found to have indirect positive impacts upon the SEA objective of protecting and enhancing human health. The implementation of a strategy can improve the health and wellbeing of local communities by reducing the immediate risk to health from flood waters such as drowning and can also reduce health complaints after a flood event such as stress and anxiety. However, the implementation of the Strategy itself does not facilitate improved health and wellbeing; therefore any benefits of the strategy remain indirect. Major positive indirect benefits were found to arise through community education and engagement. This was due to the fact that if individuals are better prepared and aware of the risks they may be less likely to be affected by them or avoid them where possible. Additionally local authorities and healthcare services may be better equipped to deal with any medical issues arising from flooding. The provision of Green Infrastructure options for example access to open space can help deliver this objective.

SEA Objective: Raise Awareness and Understanding of Flooding and its Dangers

A number of the Strategy objectives provided direct, major, positive impacts when compared with the SEA objectives. For example collaborative working with RMAs; community education and engagement; and local flood risk information all serve to directly raise awareness and understanding of flooding and its dangers. Indirectly the promotion of sustainable new developments; economically sustainable developments; a catchment based approach and objectives which derive multiple benefits all seek to raise awareness of flood risk management by taking a holistic approach which draws upon the knowledge and skills sets of different authorities to provide a comprehensive risk management framework. This approach will ultimately limit the dangers of flooding as a result of enhanced awareness and preparedness of stakeholders.

Direct (positive) impacts may arise from NCC working in partnership with RMAs to develop a prioritised and targeted community engagement strategy with at-risk communities, as highlighted within the NCC LFRMS Action Plan. The Action Plan also outlines measures for investigating options

for entering into partnerships with suppliers to support communities in protecting their own properties by obtaining self-help measures at a lower cost.

SEA Objective: Protect, Conserve and Enhance Biodiversity, Wildlife Corridors and Habitats

All of the Strategy objectives were found to have indirect, beneficial effects upon biodiversity and conservation. Flooding has the potential to drastically impact upon the natural environment and biodiversity; therefore the implementation of a Strategy, which has the potential to limit flooding, is likely to be beneficial to habitat and species conservation. However, the mere implementation of a Strategy alone will not directly benefit biodiversity. Dependent upon the actions taken, major positive direct benefits could be derived from the Strategy if habitat creation was to occur. Similarly, the construction of flood risk infrastructure may have the potential to adversely affect biodiversity. However, due to the high level approach of this SEA these impacts cannot be considered in depth and should be considered on a scheme by scheme basis.

SEA Objective: Protect and Enhance the Water Quality and Hydromorphology of Watercourses, WFD Waterbodies and Groundwater

All of the Strategy objectives bar one (*multiple benefits*) have indirect, minor positive impacts. *Multiple benefits* had a major, positive indirect impact due to the objective's aim of promoting the enhancement of water quality and the natural environment, however ultimately the promotion of such practices will not directly result in improved water/environmental quality, therefore the impact remains indirect.

Similarly the remaining impacts (minor positive) remain indirect as the objections themselves may not necessarily deliver direct outcomes. The positive impacts associated with the Strategy may actually derive secondary and/or cumulative benefits. For example the *Collaborative Working* objective may result in the sharing of expertise which may subsequently influence the planning and design of a new development which prohibits water contamination and requires the implementation of SUDs for instance. This sharing of information may consequently protect and/or enhance water quality and hydromorphology of Watercourses, WFD Waterbodies and Groundwater, and therefore constitutes a secondary impact.

Cumulative impacts are also apparent under this objective, with *Sustainable new Developments, Economically Sustainable Activities, Catchment Based Approach and Local Flood Risk Information* potentially delivering enhanced water quality.

Direct (positive) impacts may arise as there is a statutory duty upon NCC to make preparations for the implementation of the Sustainable Drainage Systems Approving Body (SAB), pending a formal announcement (Schedule 3 FWMA), as outlined in NCC's LFRMS Action Plan.

SEA Objective: Promote sustainable flood risk management

A number of Strategy objectives delivered the above SEA objective directly. In order for a flood risk management strategy to be sustainable it must be inclusive of social considerations, therefore the Strategy objective *Community Education and Engagement* is integral and provides direct, major beneficial impacts, largely through flood preparedness. Additionally the *Multiple Benefits* objective not only aims to promote sustainable flood risk management, but does so in a holistic, informed and comprehensive manner which considers climate change, improved water quality and the provision of amenity benefits, thereby facilitating environmental responsibility (one of the triple bottom-line outcomes which drive sustainability). Lastly the strategic objective *Economically sustainable activities* is vital to the development of a sustainable flood risk management strategy, enabling limited resources to be targeted most effectively to deliver cost-effective socioeconomic results. The remaining Strategy objectives are seen as indirect minor positive impacts, many of which have a cumulative effect in delivering sustainable flood risk management solutions such as *Collaborative Working and Local Flood Risk Information*.

SEA Objective: Minimise the risk of flooding on existing and future key assets, infrastructure, homes and businesses

A number of the Strategy outcomes deliver this SEA objective, in line with NCC's LFRMS's overarching aim of reducing the impact of flooding on people, property and businesses in Nottingham. The Strategy objective *Sustainable New Developments* was the only objective to result in direct impacts as the development of new residential/commercial areas which are not at risk of flooding and do not increase flooding elsewhere will directly achieve the SEA objective of '*Minimising the risk of flooding on existing and future key assets, infrastructure, homes and business*'. Both *Community Education and Engagement* and *Multiple Benefits* were seen as having major beneficial impacts. By educating the community about flooding, community resilience, preparedness and awareness ensues which thereby reduces the risk posed by flooding to local communities and associated infrastructure and key assets. The other objectives are likely to have cumulative and/or synergistic effects. For example whilst *collaborative working*, a *catchment based approach* and *local flood risk information* will not minimise flooding risks alone, together they may indirectly reduce flooding impacts through enhanced awareness, preparedness and mitigation and adaptation procedures facilitated by a comprehensive and holistic approach to flood risk management.

SEA Objective: Manage and mitigate the future effects of climate change in new and existing development

Climate change is known to be a major contributing factor to many incidents of flooding. Therefore it has been argued here that any objective which aims to minimise flooding and its associated impacts (i.e. all of the Strategy Objectives) will pose an indirect, minor, positive impact and align well with the SEA objective of *managing and measuring the future effects of climate change in new and existing developments* in regards to local flood risk management strategies.

The only objective which is proposed to result in major, indirect benefits in the short and long term is *Multiple Benefits* which promotes flood risk management activities that consider climate change. However, as aforementioned the promotion of such activities itself will not result in a direct benefit, it is perhaps more likely that a secondary impact (such as the implementation of flood risk management activities which promote climate change) will result in the future management and mitigation of climate change.

As the effects of climate change are likely to worsen over time the implementation of *collaborative working* and *sustainable new developments* is suggested to have a stronger positive impact in the longer term.

SEA Objective: Conserve and enhance the historic environment, heritage assets and their settings

Whilst the historic environment and heritage assets of Nottingham are integral to the City's cultural heritage, the Strategy does not have an objective specifically aimed at protecting or enhancing heritage asset. However, the majority of the SEA objectives cumulatively promote the protection of such assets; therefore each Strategy objective has been considered as having an indirect, minor positive impact. Additionally it is possible that these objectives may have synergistic effects due to the collaboration of various stakeholders who as a combined effort can further aid in the protection and enhancement of such valuable assets.

Direct (positive) impacts may arise from the continued proactive and reactive clearance of watercourse trash screens, and silt removal and management at Broxtowe Park Brook as discussed in NCC's LFRMS Action Plan.

SEA Objective: Protect, conserve and enhance the quality, character and availability of open spaces and natural resources

Similarly to the heritage asset SEA objective, each Strategy objective was seen as having an indirect, minor beneficial impact when compared to the SEA objective of *protecting, conserving and enhancing the quality, character and availability of open spaces and natural resources*. This is due to the fact that this SEA objective will be achieved indirectly through the completion of other objectives of the Strategy which will reduce flood risk and hence offer a level of protection to Nottingham's natural resources. For example the *Multiple Benefits* objective aims to *promote flood risk management activities that consider climate change, enhance the natural environment, improve water quality and*

provide amenity benefits. The provision of Green Infrastructure options for example access to open space can help deliver this objective.

8.4 Assessment of Alternatives

For each of the Strategy objectives a 'do nothing' alternative has been considered in order to show how the current state of the environment is likely to evolve without implementation of the strategy. It is considered that existing maintenance regimes and the like (such as the proactive and reactive clearance of trash screens) will continue and land use and spatial planning methods would remain the same. It is also assumed that no attempts are made to enhance community awareness and education regarding flood risk; to improve methods of flood recording; flood risk studies are not carried out; the public are not informed on flood risk; flood risk management groups and authorities are not retained; and advice or funding for local schemes is not provided. These assumptions would result in a potential risk to property and communities from surface water and groundwater flooding alongside flooding from ordinary watercourses. Due to threats such as climate change, the effect of failing to implement the Strategy upon the natural environment is uncertain. It is expected that habitat loss may occur due to inundation which will affect biodiversity; there will be increased pollution as a result of flooding events; and the historic environment of Nottingham may be compromised as a result of flood damage.

Table 8-3 shows the results of a 'do nothing' approach upon the SEA objectives.

Table 8-3. A 'Do Nothing' Approach Compared Against SEA Objectives.

			SEA Objectives									
			1	2	3	4	5	6	7	8	9	
			Protect and enhance human health and wellbeing	Raise awareness and understanding of flooding and its dangers	Protect, conserve and enhance biodiversity, wildlife corridors habitats and geodiversity	Protect and enhance the water quality and hydromorphology of watercourses, WFD waterbodies and groundwater	Promote sustainable flood risk management	Minimise the risk of flooding on existing and future key assets, infrastructure, homes and businesses	Manage and mitigate the future effects of climate change in new and existing development	Conserve and enhance the historic environment, heritage assets and their settings	Protect, conserve and enhance the quality, character and availability of open spaces and natural resources	
Strategy Objectives	Collaborative working	Work collaboratively with Risk Management Authorities and stakeholders to deliver effective maintenance, understand flood risk, to jointly invest in schemes and share expertise.	Short term	Indirect -	Direct --	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -
		Long term	Indirect -	Direct --	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Indirect --	Indirect -	Indirect -
	Sustainable new developments	Ensure that new development is sustainable, is not at risk of flooding and does not increase flooding elsewhere. Promote the use of Sustainable Drainage Systems.	Short term	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Direct --	Indirect -	Indirect -	Indirect -
			Long term	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Direct --	Indirect --	Indirect -	Indirect -
	Economically sustainable	Deliver cost-effective, proportional and risk-based flood risk	Short term	Indirect -	Indirect -	Indirect -	Indirect -	Direct --	Indirect -	Indirect -	Indirect -	Indirect -

activities	management schemes and maintenance activities.	Long term	Indirect -	Indirect -	Indirect -	Indirect -	Direct --	Indirect -	Indirect -	Indirect -	Indirect -
Community education and engagement	Educate and engage with communities and politicians to raise awareness of flood risk, resilience measures, preparedness and riparian responsibilities.	Short term	Indirect --	Direct --	Indirect -	Indirect -	Direct --	Indirect --	Indirect -	Indirect -	Indirect -
		Long term	Indirect --	Direct --	Indirect -	Indirect -	Direct --	Indirect --	Indirect -	Indirect -	Indirect -
Multiple benefits	Promote flood risk management activities that consider climate change, enhance the natural environment, improve water quality and provide amenity benefits.	Short term	Indirect -	Indirect -	Indirect --	Indirect --	Direct --	Indirect --	Indirect --	Indirect -	Indirect -
		Long term	Indirect -	Indirect -	Indirect --	Indirect --	Direct --	Indirect --	Indirect --	Indirect -	Indirect -
Catchment based approach	Promote a joined-up and catchment-based approach to flood risk management.	Short term	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -
		Long term	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -
Local flood risk information	Further improve data, asset information and knowledge of current and future local flood risk using a risk-based approach.	Short term	Indirect -	Direct --	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -
		Long term	Indirect -	Direct --	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -	Indirect -

8.4.1 Assessment Summary

The assessment of each of the Strategy objective 'do nothing' alternative scenarios against the SEA objectives concludes that a 'do nothing' approach is likely to have a detrimental effect upon the environment, this is due to the fact that all strategy objectives under a 'do nothing' scenario are predicted to adversely affect the key receptors outlined by the SEA objectives. Largely the assessment predicts the inverse of the previous assessment wherein most impacts were deemed as indirect minor positive impacts, conversely the 'do nothing' scenario result in mainly minor, adverse indirect impacts. However, a number of Strategy objectives were deemed to have a direct adverse impact under a 'do nothing' scenario.

Direct, Major, Adverse Impacts

Direct adverse impacts were predicted to arise from seven strategy objectives under a 'do nothing' approach:

- The failure to *work collaboratively* with RMA's and stakeholders in a bid to deliver effective maintenance, understand flood risk and to jointly invest in schemes and share expertise upon the SEA objective of raising awareness and understanding of flooding and its dangers;
- The failure to facilitate and *deliver community education and engagement* upon the SEA objective of raising awareness and understanding of flooding and its dangers;
- The failure to provide *local flood risk information* upon the SEA objective of raising awareness and understanding of flooding and its dangers;
- The inability to deliver economically *sustainable initiatives, community education and engagement* and *multiple benefits* to facilitate the promotion of sustainable flood risk management; and,
- The inability to deliver sustainable new developments upon the SEA objective of minimising the risk of flooding on existing and future key assets, infrastructure, homes and businesses.

The majority of these direct impacts are associated with the SEA objectives of raising awareness and understanding of flooding and its dangers and the promotion of sustainable flood risk management. This is predicted due to the fact that if communities are not made aware and educated about the risks of flooding then their preparedness and resilience will be compromised hence making them more vulnerable to potential risks, a direct, major adverse impact. Similarly if new builds are not sustainable (i.e. economically viable, environmentally responsible and socially just) they have the potential to not only increase flood risk but make communities more vulnerable both locally and downstream.

Indirect, Major, Adverse Impacts

Nine Strategy objectives were predicted to have an indirect, major adverse impact upon the environment:

- The failure to facilitate *community education and engagement* upon the protection and enhancement of human health and wellbeing and the minimisation of flood risk to infrastructure;
- The failure to deliver *Multiple benefits* upon biodiversity conservation, the protection and enhancement of water and water quality, flood risk and the future effects of climate change; and,
- The long-term effects of limited *collaborative working* and *sustainable new developments* upon the management and mitigation of the future effects of climate change in new and existing developments.

The majority of these indirect, major, adverse impacts are associated with the Strategy objectives of *Community Education and Engagement* and *Multiple Benefits*. As aforementioned whilst community engagement and education may not limit flood risk and protect human health directly, the awareness and resilience derived from such programmes helps communities to better adapt to and mitigate flood risk.

The strategy objective of *Multiple Benefits* was also affected by a 'do nothing' scenario, this is due to the fact that a large number of indirect benefits are derived from this strategy relating to climate change, the natural environment, water quality and amenity benefits.

Indirect, Minor, Adverse Impacts

As aforementioned a number of Strategy objectives under a 'do nothing' scenario had minor, indirect yet adverse impacts upon the environment.

Collaborative working and a Catchment Based Approach

By failing to work with RMA's, effective maintenance, understanding of flood risk from varying perspectives, sharing of knowledge and expertise, and joint investment in flood risk management schemes cannot occur. Subsequently human health, biodiversity, infrastructure, historic assets and natural resources may be compromised. It must be acknowledged that flooding is influenced by numerous drivers (climate change, water cycles, topography, the distribution of natural and manmade surfaces etc.), additionally it has impacts upon many different sectors and receptors, therefore a 'joined-up' approach with collaboration from appropriate stakeholders is essential for effective management.

Sustainable new developments

If new developments fail to be sustainable this may lead to increased flooding incidents in the local area and downstream. Consequently this flooding will impact a number of receptors and potentially adversely impact: human health, biodiversity, water quality, and infrastructure, key assets, along with the historic and natural environment. Without the development of sustainable new builds current flooding may be exacerbated.

Economically Sustainable Activities

Without the implementation of economically viable, cost-effective flood risk management projects limited resources will not be used as effectively as possible, therefore resulting in further flooding which has the potential to impact biodiversity, human health, water quality, infrastructure and natural and historical environments. It must also be noted that economic viability is a triple bottom-line outcome of sustainability and therefore intrinsic to sustainable development.

Local Flood Risk Information

A failure to improve data and gain asset information and knowledge of current and future local flood risk using a risk-based approach increases flood risk to a number of receptors as a result of reduced preparedness and resilience. Additionally an increasing amount of information and data will help tailor financial resources to the receptors which may require the most protection and hence result in their conservation.

8.5 Assessment of Cumulative Effects

Cumulative effects arise can arrive where several (perhaps insignificant) effects combine to create a significant impact; or where several individual effects of a plan have a combined effect, either adversely or beneficially.

Guidance on the principles of assessing cumulative effects recommends that the assessment:

- Focusses on the total effect of both direct and indirect effects on receptors (such as biodiversity, water, cultural heritage, etc.);
- Takes into account the nature and extent of the receptors, such as ecosystems and communities, rather than administrative boundaries;
- Takes into account the effects of proposals with the Strategy and those which may result from interaction with the effects of other plans, programmes or strategies; and,
- Is aware of and documents the level of uncertainty.

Given the number of plans, programmes and action plans being undertaken through other organisations, and their associated management activities for each environmental topic, there is potential for cumulative effects with the Strategy.

The information provided in the review set out in Appendix A was used as a basis for cumulative effects assessment. Professional judgment was also used to identify effects arising from these plans which may have cumulative effects with the Strategy. Particular attention was given to those effects which may be insignificant within individual plans, but cumulatively may be potentially significant.

It should be noted, however, that many of the relevant plans and programmes which have been reviewed in Appendix A are reported at a strategic level, as is the Strategy, and therefore do not directly relate to physical changes or actions 'on the ground'. The level of risk and uncertainty associated with cumulative effects increases at a higher strategic level because the scale is broader and environmental issues are larger.

The level of uncertainty in predicting effects and determining significance is due to:

- Variation in natural systems and interactions across the NCC area and the wider environment;
- A lack of information or knowledge regarding cause-effect relationships; and,
- The inability of predictive models to accurately represent complex systems.

8.5.1 Assessment Summary

At this stage of environmental assessment, and due to the high level nature of this assessment (i.e. no site specific measures or on the ground activities have been presented), the assessment of potential cumulative impacts of the Strategy and other plans, programmes and action plans concludes that there is likely to be both a great deal of beneficial cumulative impacts with the potential for adverse cumulative impacts.

SEA Objective: Protect and enhance human health and wellbeing

SEA Objective: Raise awareness and understanding of flooding and its dangers

There is a large potential for beneficial cumulative impacts upon human health and enhanced awareness of flood risk. For example the Strategy objectives of *collaborative working, community engagement and education* and *local flood risk information* have the potential to cumulatively enhance awareness of flood risk amongst communities. This enhanced awareness could aid preparedness and ultimately facilitate resilience amongst the population, reducing the inherent risk of flooding and therefore protecting communities. Additionally the development of sustainable new builds protects

individuals from flood in the first instance. Perhaps less tangible are the benefits which communities will derive from cultural ecosystem services as a result of asset management. Cultural services including that of recreation and leisure can actively enhance and promote health and wellbeing.

SEA Objective: Protect, conserve and enhance biodiversity, wildlife corridors and habits

An overall reduction in flooding derived from a number of Strategy objectives including *Multiple Benefits, Collaborative Working and Sustainable New Development* will ultimately result in biodiversity conservation. Additionally *Collaborative Working* and *Local Flood Risk Information* will result in the sharing of information related to flood risk management and will potentially result in a more comprehensive, thorough and effective future management style which will benefit biodiversity. However, it must be noted that a number of actions could negatively impact upon Biodiversity and these include the development of flood risk infrastructure. Where such developments take place, mitigation must be put in place for any potential habitat interference. Conversely it is also possible that such developments may actually enhance local biodiversity efforts through habitat creation.

SEA Objective: Protect and enhance the water quality and hydromorphology of watercourses, WFD waterbodies, and groundwater

As flooding incidents have the potential to drastically impact water quality it could be argued that all of the Strategy objectives (which have the aim of reducing flooding and its impacts) will act cumulatively to enhance water quality. Ensuring that new developments are sustainable and promote the use of SuDs whilst enhancing water quality (through the *Multiple Benefits* objective) will likely result in beneficial cumulative effects on water quality, especially downstream. Additionally the *Local flood risk information* objective is likely to provide enhanced baseline data for the future monitoring and management of water quality.

SEA Objective: Promote sustainable flood risk management

SEA Objective: Minimise the risk of flooding on existing, and future key assets, infrastructure, homes and businesses

SEA Objective: Conserve and enhance the historic environment, heritage assets and their settings

SEA Objective: Protect, conserve and enhance the quality, character and availability of open spaces and natural resources

As the overarching aim of the Strategy is to reduce the impact of flooding on people, property and businesses in Nottingham, it could be argued that all the SEA objectives and their outcomes will cumulatively deliver the aim of reducing flood risk in the local area. For example the information derived from *Local flood risk information* can be shared through *collaborative working* to facilitate a

catchment based approach which delivers *multiple benefits*. Subsequently key assets; infrastructure; homes; businesses; historic environment and heritage assets will be protected from flood risk.

SEA Objective: Manage and mitigate the future effects of climate change in new and existing developments

As climate change is a factor which can determine flood risk and not the other way around it has been suggested that no cumulative effects for this SEA objective are apparent with the current level of knowledge.

9 CONCLUSIONS AND MONITORING

9.1 Conclusion

The SEA has shown that the NCC LFRMS is likely to have beneficial impacts upon the environment in both the short and long term (i.e. beyond the life of the strategy). Largely this is due to the proactive, holistic, sustainable approach of the Strategy which has the primary aim of protecting Nottingham's people, homes, businesses and key assets including Nottingham's rich heritage. Each of the Strategy objectives is predicted to fulfil each environmental objective identified within the SEA framework with a beneficial outcome. For example the Strategy's objectives of working collaboratively with partners, community education and engagement and providing local flood risk information work together in ensuring that the communities of Nottingham are prepared for any imminent flood which ultimately reduces their risk as a result of hazard preparedness and resilience.

The majority of the Strategy objectives are likely to have indirect beneficial effects upon the environment as they relate to improved data acquisition, enhanced knowledge, understanding and high level management of flood risk, rather than individuals actions which would potentially have a larger effect 'on the ground'.

The benefits of implementing the Strategy are perhaps best demonstrated by the 'do nothing' alternative which demonstrates an adverse impact on the environment through the failure to implement the Strategy. In the short term a lack of a Strategy would leave local communities and assets at an increased risk of flooding and its associated impacts. It is likely that this risk would only heighten over time as a result of climate change and its associated impacts upon flood frequency and magnitude.

Whilst the assessment of cumulative impacts suggested that adverse impacts could arise over time, the resounding prediction was that a vast number of beneficial cumulative impacts would arise from implementation of the Strategy, a prediction which further highlights the thorough, comprehensive, joined-up approach of the strategy.

As a result of these findings the SEA puts no recommendations forward for the Strategy.

9.2 Mitigation

As the SEA has determined no adverse impacts will result from the implementation of the Strategy no mitigation measures have been put forward at this stage. However measures for mitigation should be made at the individual site level through the EIA process, to ensure mitigation of potential adverse effects is ensured.

9.3 Proposed Monitoring

The SEA Directive requires significant environmental effects resulting from the implementation of the strategy to be monitored. Monitoring of the Strategy will drive continual improvement and enable the identification and management of any unforeseen adverse effects. Monitoring also enables the successes of the scheme to be determined and capitalised upon against environmental baselines.

Table 9-1 shows the SEA monitoring framework and the potential monitoring indicators for each SEA objective which could be implemented. Data required for the monitoring of the Strategy can be acquired from a number of sources including Nottingham City Council, Nottinghamshire County Council, the Environment Agency, Natural England and English Heritage.

Table 9-1: Proposed indicators for monitoring the potential significant and uncertain environmental effects of the Strategy

SEA Objective	Potential Monitoring Indicator
<i>Human Health & Population</i>	
1. Protect and enhance human health and wellbeing 2. Raise awareness and understanding of local flooding and its dangers	<ul style="list-style-type: none"> • Number of people with a reduced risk of flooding as a result of investment in flood risk management infrastructure. • Number of people with a reduced risk of flooding in deprived areas. • Number of community sessions attended (e.g. Ward Forums, Area Committees etc.) • Number of people attending the above sessions • Number of flood risk management communications campaigns • Number of projects and schemes that provide amenity benefits
<i>Biodiversity</i>	
3. Protect, conserve and enhance biodiversity, wildlife corridors and habitats	<ul style="list-style-type: none"> • Number of projects and schemes that provide amenity benefits • Areas of habitat adversely/beneficially impacted as a result of flood management measures
<i>Water</i>	
4. Protect and enhance the water quality and hydromorphology of watercourses, WFD waterbodies and groundwater. 5. Promote sustainable flood risk management.	<ul style="list-style-type: none"> • Number of planning applications approved that incorporate Sustainable Drainage Systems • Number of projects and schemes that provide water quality improvements • Number of projects and schemes completed in Partnership • Number of projects and schemes with external funding contributions • Number of projects and schemes that consider climate change impacts. • Number of projects and schemes where measures across the entire catchment are considered • Number of projects and partnerships where engagement has taken place with partners that operate within the catchment. • Number of studies completed that quantify local flood risk • WFD objectives achieved on watercourses where measures have been implemented • Consultation with the EA regarding ecological and chemical status of waterbodies • Consultation with Nottinghamshire County Council on Trans-boundary impacts
<i>Material Assets</i>	
6. Minimise the risk of flooding on existing and future key assets, infrastructure, homes and businesses.	<ul style="list-style-type: none"> • Number of properties, businesses and critical infrastructure with a reduced risk of flooding as a result of investment in flood risk management infrastructure. • Number of planning applications approved that incorporate

<p>7. Manage and mitigate the future effects of climate change in new and existing development.</p>	<p>resilient design.</p> <ul style="list-style-type: none"> • Number of projects and schemes that provide green infrastructure. • Complete and maintain a robust asset register • Number of asset inspections completed • Number/severity/duration of incidents leading to unplanned disruption or damage to essential infrastructure and service provision • Number/scale/quality of SuDs schemes adopted into existing and future developments • Number of new developments permitted in areas of flood risk
<p><i>Cultural, Archaeological and Architectural Heritage</i></p>	
<p>8. Conserve and enhance the historic environment, heritage assets and their settings</p>	<ul style="list-style-type: none"> • Number of assets at risk of local flooding • Number of assets which have experienced flooding • Number of conservation areas at risk of flooding • Number of flood risk management measures implemented that conserve and enhance heritage assets • Number of assets with a reduced/increased risk of flooding as a result of investment in flood risk management infrastructure.
<p><i>Landscape and Townscape</i></p>	
<p>9. Protect, conserve and enhance the quality, character and availability of open spaces and natural resources</p>	<ul style="list-style-type: none"> • Number/area of open spaces at significant risk of local flooding, identified using site specific surface water or ordinary watercourse flood modelling • Number of measures that include enhancements to open spaces and recreational areas • Areas of enhanced landscape and green infrastructure as a result of flood reduction measures.

APPENDIX A – FULL POLICY CONTEXT REVIEW

Plan	Key Messages	SEA Topics
International		
SEA Directive (2001) Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment	Contributes to the high level environmental protection and the consideration of environmental issues in the preparation and adoption of plans and programmes with the intent of promoting sustainable development.	All
The Johannesburg Declaration of Sustainable Development (2002)	Commits the nations of the world to sustainable development.	All
Arhus Convention (1998) (Convention on Access to Information, Public Participation in decision –making and Access to Justice in environmental Matters)	Links environmental rights and human rights. Acknowledges that we owe an obligation to future generation. Establishes that sustainable development can be achieved only through the involvement of all stakeholders. Links government accountability and environmental protection. Focuses on interactions between the public and public authorities in a democratic context.	All
Convention on Biological Diversity ²⁷ (1992)	Sets the target to achieve by 2010 a significant reduction of the current rate of biodiversity loss. The Strategic Plan for Biodiversity 2011-2020, including Aichi Biodiversity Targets, forms the overarching framework on biodiversity.	Biodiversity
The Habitats Directive (92/43/EEC)	Requires the protection of species and habitats of EU nature conservation designation. The Directive requires that development can only be allowed where it does not impact on important sites that protect habitats otherwise compensation measures must be put in place.	Biodiversity

<p>The Birds Directive 2009/147/EC (codified version of 79/409/EEC)</p>	<p>Provides for the protection of all naturally occurring wild bird species and their habitats, with particular protection of rare species. The Directive requires that measures are taken to preserve, maintain or re-establish a diversity of habitats for all the birds listed in Article I.</p>	<p>Biodiversity</p>
<p>Our life insurance, our natural capital: an EU biodiversity strategy to 2020 COM(2011) 244 final</p>	<p>Headline target is to halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and to restore them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss.</p>	<p>Biodiversity</p>
<p>The European Landscape Convention 2000 (signed 2006)²⁸</p>	<p>Promotes various actions at the landscape scale ranging from strict conservation through protection, management and improvement to creation.</p>	<p>Biodiversity, Material Assets and Cultural Heritage</p>
<p>Air Quality Directive (2008/50/EC)²⁹ and Air Quality Standards Regulations (2010)³⁰</p>	<p>The Directive on ambient air quality and cleaner air merged most existing legislation in to a single directive and sets limits for concentrations of pollutants in outdoor air. The Air Quality Standards Regulations (2010) transpose into English law the requirements of Directives 2008/50/EC and 2004/107/EC on ambient air quality.</p>	<p>Air, Human Health, Biodiversity</p>
<p>The Industrial Emissions Directive (2010) Directive 2010/75/EU on Industrial Emissions (Integrated Pollution Prevention and Control)</p>	<p>Provides rules for the delivery of integrated prevention and pollution of pollution arising from industrial activities designed to prevent or, where not practical, reduce emissions into air, water and land as well as to prevent the generation of waste to achieve a high level of protection of the environment. Emission limit values are set for substances harmful to air or water.</p>	<p>Not applicable</p>

²⁸ http://www.coe.int/t/dq4/cultureheritage/heritage/Landscape/default_en.asp

²⁹ Air Quality Directive 2008/50/EC: http://ec.europa.eu/environment/air/quality/legislation/existing_leg.htm

³⁰ Regulations transposing the Air Quality Directive are at: <http://www.legislation.gov.uk/uksi/2010/1001/regulation/1/made>

<p>The Water Framework Directive (2000/60/EC)</p>	<p>Promotes an integral and coordinated approach to water management at the river basin scale. Also encourages protection of soil and biodiversity. It aims to: Prevent deterioration of aquatic ecosystems and associated wetlands; Promote the sustainable use of water; Reduce pollution of water; and introduce a co-ordinated approach to water management based on the concept of river basin planning.</p>	<p>Biodiversity, Water</p>
<p>The Drinking Water Directive (1998) Directive 98/83/EC on the quality of water intended for human consumption</p>	<p>Seeks to protect public health by reducing the risk of the contamination of water intended or human consumption. Member States to set values for water intended for human consumption.</p>	<p>Water</p>
<p>The Floods Directive (2007/60/EC) on the assessment and management of flood risks</p>	<p>Aims to reduce and manage the risks that floods pose to human health, environment, cultural heritage and economic activity. Requires Member States to undertake a preliminary assessment by 2011 to identify the river basins and associated coastal areas at risk of flooding. Where necessary flood risk maps are to be produced by 2013 with flood risk management plans focused on prevention, protection and preparedness being in place by 2015.</p>	<p>Water, Human Health, Biodiversity, Cultural Heritage</p>
<p>Urban Wastewater Treatment Directive (1991)³¹</p>	<p>Aims to protect the environment from the adverse effects of wastewater discharges through a requirement for the secondary treatment of urban wastewater.</p>	<p>Water</p>
<p>The Nitrates Directive (1991) Directive 91/676/EEC on nitrates from agricultural sources</p>	<p>Seeks reduction of water pollution caused or induced by nitrates from agricultural sources and prevent further pollution.</p>	<p>Water</p>

³¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1991L0271:20081211:EN:PDF>

Directive 99/31/EC, Landfill Regulations (2002) and Amendment (2005) ³²	Prevents or reduces the negative effects from the landfilling of wastes upon the environment through various technical requirements. Also sets targets for the reduction of biodegradable wastes placed in landfill to 50% of the 1995 level in 2013 and 35% by 2020.	Not applicable
The Waste Framework Directive (2008), Hazardous Waste Directive (1991) IPPC Directive (1996) and Landfill Directive (1999) ³³	Aims to ensure that all necessary measures have been taken to ensure that waste is recovered or disposed of without causing harm to human health or the environment	Human Health
The Packaging and Packaging Waste Directive (1994) Directive 94/62/EC on packaging and packaging waste	Seeks to reduce the environmental impact of packaging wastes by the harmonisation across Europe. Sets recovery rates for packaging materials	Not applicable
World Heritage Convention (1972) ³⁴	Calls for the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage sites.	Cultural Heritage
The Convention for the Protection for the Architectural Heritage of Europe (The Granada Convention) ³⁵	The main purpose of the Convention is to reinforce and promote policies for the conservation and enhancement of Europe's heritage. It also affirms the need for European solidarity with regard to heritage conservation and is designed to foster practical co-operation among the Parties. It establishes the principles of "European co-ordination of conservation policies" including consultations regarding the thrust of the policies to be implemented.	Cultural Heritage

³² Council Directive 99/31/EC on the landfill of waste and the landfill (England and Wales) Regulations 2002 and Amendment Regulations 2005 accessible via: <http://www.opsi.gov.uk/SI/si2002/20021559.htm>

³³ Access to these directives is via: <http://ec.europa.eu/environment/waste/legislation/a.htm>

³⁴ <http://whc.unesco.org/en/conventiontext>

³⁵ <http://conventions.coe.int/Treaty/Commun/QueVoulezVous.asp?NT=121&CM=1&CL=ENG>

<p>The European Convention on the Protection of Archaeological Heritage (The Valetta Convention)³⁶</p>	<p>The revised Convention updates the provisions of a previous Convention (ETS No. 66) adopted by the Council of Europe in 1969.</p> <p>The new text makes the conservation and enhancement of the archaeological heritage one of the goals of urban and regional planning policies. It is concerned in particular with arrangements to be made for co-operation among archaeologists and town and regional planners in order to ensure optimum conservation of archaeological heritage.</p> <p>The Convention sets guidelines for the funding of excavation and research work and publication of research findings. It also deals with public access, in particular to archaeological sites, and educational actions to be undertaken to develop public awareness of the value of the archaeological heritage.</p>	<p>Cultural Heritage</p>
<p>Adapting to Climate Change: Towards a European framework for Action (2009)</p>	<p>Promote strategies that increase the resilience to climate change of health, property and the productive functions of land, inter alia by improving the management of water resources and ecosystems.</p> <p>Framework for adaptation measures and policies to reduce the European Union's vulnerability to the impacts of climate change. The White Paper outlined the need for establishing a Clearing House Mechanism by 2011 that would enable exchanging information on climate risks, impacts and best practices between government, agencies and organisations working on adaptation policies.</p>	<p>Climate Change</p>
<p>National</p>		
<p>Flood Risk Regulations (2009) (SI 3042)</p>	<p>Sets duty on Environment Agency and lead local flood authorities to prepare preliminary assessment maps and reports for river basin districts and flooding. A further duty is to identify flood risk areas and prepare flood risk management plans.</p>	<p>Not applicable</p>

³⁶ <http://conventions.coe.int/Treaty/Commun/QueVoulezVous.asp?NT=143&CM=1&CL=ENG>

<p>UK National Heritage Protection Plan</p>	<p>The National Heritage Protection Plan (NHPP) sets out how English Heritage, together with partners in the heritage sector, will prioritise and deliver heritage protection from 2011 to 2015.</p>	<p>Cultural Heritage</p>
<p>Flood and Water Management Act (2010)³⁷</p>	<p>The Act Section 21 sets a duty on the Lead Local Flood Authority (LLFA)³⁸ to maintain a register of structures or features, and a record of information about each of those structures or features, which, in the opinion of the authority, are likely to have a significant effect on flood risk in its area helping to improve our understanding and management of local flood risk. Section 30 allows the Environment Agency, LLFAs and Internal Drainage Boards (IDBs) to designate natural or artificial features that are important for flood or coastal erosion risk management. The effect of a designation is that a feature may not be altered, replaced or removed without consent. A new regulation will require all LLFA's to assess all drainage designs prior to construction to determine whether the design meets national sustainable drainage standards.</p>	<p>Not applicable</p>
<p>National Flood and Coastal Erosion Risk Management (FCERM) Strategy for England (2011)³⁹</p>	<p>Sets out a statutory framework that will help communities, the public sector and other organisations to work together to manage flood and coastal erosion risk. Aim is to ensure that flooding and coastal erosion risks are well-managed and co-ordinated. The strategy covers flooding from the sea, rivers, surface water, sewers, groundwater and reservoirs.</p>	<p>Not applicable</p>

³⁷ <http://www.legislation.gov.uk/ukpga/2010/29/contents>

³⁸ The Unitary or County Council for the area.

³⁹ <http://www.environment-agency.gov.uk/research/policy/130073.aspx>

<p>Guidance for risk management authorities on sustainable development in relation to their flood and coastal erosion risk management (Defra, 2011)⁴⁰.</p>	<p>Provides guidance on how authorities can contribute towards achievement of sustainable development when exercising flood and coastal erosion risk management functions, as required by the Flood and Water Management Act (2000)</p>	<p>Not applicable</p>
<p>Appraisal of flood and coastal erosion risk management (Defra, 2009)⁴¹</p>	<p>Sets out the principles that should guide decision making on the sustainable management of flood and coastal erosion risk in England. In particular it emphasises the need to ensure that appraisals for all activity (whether strategic level plans or individual projects):</p> <ul style="list-style-type: none"> • Give more consideration to ‘risk management’ and ‘adaptation’, as opposed to only ‘protection’ and ‘defence’; • Are undertaken consistently, transparently, with value for money in mind and in a way that complies with the Treasury guidance on appraisal and evaluation in central Government (The Green Book); • Help achieve better social and environmental outcomes as part of sustainable development, both by considering a broader range of issues and by using a broader range of analysis techniques; • Adopt a risk-based approach, whilst considering impacts within the whole of a catchment or shoreline process area. 	<p>Not applicable</p>

⁴⁰ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69447/pb13640-sdg-guidance.pdf

⁴¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69419/pb13278-erosion-manage-090619.pdf

<p>Future Water – The Government’s Water Strategy for England (Defra, 2008)⁴²</p>	<p>Recognises that poor surface water management can cause water quality problems. The Government vision for water policy and management is one where, by 2030 at the latest, we have:</p> <ul style="list-style-type: none"> • Improved the quality of our water environment and the ecology which it supports, and continued to provide high levels of drinking water quality from our taps. • Sustainably managed risks from flooding and coastal erosion, with greater understanding and more effective management of surface water. • Ensured a sustainable use of water resources, and implemented fair, affordable and cost reflective water charges. • Cut greenhouse gas emissions. • Embedded continuous adaptation to climate change and other pressures across the water industry and water users. 	<p>Water</p>
<p>Groundwater Protection Policy & Practice (EA, 2006)</p>	<p>Protection of groundwaters.</p>	<p>Water</p>
<p>Groundwater (England and Wales) Regulations (2009)⁴³</p>	<p>Seeks to prevent or limit the input of pollutants into groundwater.</p>	<p>Water</p>
<p>Water Act 2003</p>	<p>Encourage more efficient use of water resources</p>	<p>Water</p>

⁴² http://www.official-documents.gov.uk/document/cm73/7319/7319.pdf?bcsi_scan_AB11CAA0E2721250=0&bcsi_scan_filename=7319.pdf

⁴³ http://www.legislation.gov.uk/ukxi/2009/2902/pdfs/ukxi_20092902_en.pdf

<p>Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 (SI 3242)</p>	<ul style="list-style-type: none"> • Aims to improve water quality and promote the sustainable use of all UK waterbodies, including coastal waters, estuaries and all inland waterbodies; • It requires all UK river basins to reach "good status" by 2015, through demanding environmental objectives, including chemical, biological and physical targets; • Charged the Environment Agency with production of River Basin Management Plans to be implemented by end of 2009; • Three types of UK water quality standards are being developed (a formal classification instrument should be completed in late 2007): Priority substances (and Priority Hazardous Substances); Specific Pollutants; and Physico-chemical pollutants. 	<p>Water, Biodiversity</p>
<p>Water for Life White Paper (2011)</p>	<p>Recognises that water resources are already under pressure and that future changes such as climate change and demographic change, will exert further pressure. Government objectives include:</p> <ul style="list-style-type: none"> • Paint a clear vision of the future and create the conditions which enable the water sector and water users to prepare for it • Deliver benefits across society through ambitious agenda for improving water quality, working with local communities to make early improvements on the health of our rivers by reducing pollution and tackling unsustainable abstraction • Work with water companies, regulators and other stakeholders to build understanding of the impact personal choices have on the water environment, water resources and costs; • Set out roles and responsibilities – including where Government will take a stronger role in strategic direction setting and assessing resilience to future challenges, as well as clear expectations on the regulators. 	<p>Water, Biodiversity</p>

<p>Strategic Framework and Policy Statement on Improving the Resilience of Critical Infrastructure to Disruption from Natural Hazards (2010)</p>	<p>Sets approach to managing risk to infrastructure:</p> <ul style="list-style-type: none"> • Build a level of resilience into critical infrastructure assets that ensures continuity during a worst case flood event. • Considering the threat from current and future natural hazards in the design of new assets. • Increase the robustness and resilience of existing services or assets by building additional network connections. • Identifying key components and moving them out of harm's way. • Improved arrangements for sharing of information on infrastructure network performance and standards. • Enhancing skills and capabilities to respond to emergencies arising from natural hazards. 	<p>Material Assets</p>
<p>National Infrastructure Plan (2010)</p>	<p>Forecasts a 20% increase in congestion by 2025 and requires a change to how infrastructure is planned, coordinated and delivered with adaptation to provide security and resilience. Private sector capital is to be attracted and the cost of capital for projects needs to be reduced.</p>	<p>Material Assets</p>
<p>Consultation Draft Waste Management Plan for England (2013)</p>	<p>Aims to deliver the objectives of the revised Waste Framework Directive: to protect the environment and human health by preventing or reducing the adverse impacts of the generation and management of waste and by reducing overall impacts of resource use and improving the efficiency of such waste. There are comprehensive waste management policies in England, which taken together deliver the above objectives, the core of this policy is therefore to bring current policies under the umbrella of one national plan.</p>	<p>Material Assets</p>
<p>Climate Resilient Infrastructure: Preparing for a Changing Climate (May, 2011)</p>	<p>A strategic approach to adapting national infrastructure that can be replicated at the sub-regional and local level by local authorities and the new Local Enterprise Partnerships (LEPs) (see paragraph 3.4.6) is described.</p>	<p>Material Assets</p>

UK Climate Impacts Programme (2009)	Updated climate change projections based on three global emission scenarios provide forecasts for a climate and weather related impacts.	Material Assets
Climate Change: The Climate Change Act (2008) ⁴⁴	Requires that the average annual emissions in the carbon budget period including the year 2020 (i.e. the third period, 2018-2022) are at least 34% below the 1990 baseline. This is a 34% reduction by 2020. The 2008 Planning Act placed a duty on local authorities to include policies on climate mitigation and adaptation.	Material Assets
National Adaptation Plan (2013)	Meets the requirements of the Climate Change Act (2008). Objectives have been developed to address the greatest risks and opportunities: <ul style="list-style-type: none"> • Increasing awareness; • Increasing resilience to current extremes; • Taking timely action for long-lead time measures; and • Addressing major evidence gaps. 	Material Assets
The Wildlife & Countryside Act (1981) as amended (most notably by the Countryside and Rights of Way (CRoW) Act (2000)	Principal instrument for the protection of Sites of Special Scientific Interest and endangered wildlife within the UK. The CRoW Act aims for increased public access to the countryside and strengthens protection for wildlife.	Biodiversity
Biodiversity 2020: A Strategy for England's wildlife and ecosystem services (2011) ⁴⁵	Ensures biodiversity considerations become embedded in all the main sectors of economic activity, public and private. It sets out the strategic direction for biodiversity policy for the next decade on land (including rivers and lakes) and at sea.	Biodiversity

⁴⁴ Available online at: http://www.opsi.gov.uk/acts/acts2008/ukpga_20080027_en_1

⁴⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69446/pb13583-biodiversity-strategy-2020-111111.pdf

<p>Making Space for Nature: A Review of England's Wildlife Sites and Ecological Network (Defra, 2010)</p>	<p>Sets out five approaches to deliver a coherent, resilient ecological network:</p> <ul style="list-style-type: none"> • improve the quality of current site by better habitat management; • increase the size of current wildlife sites; • enhance connections between, or join up, sites wither through physical corridors, or though 'stepping tones'; • create new sites; and • reduce the pressures on wildlife by improving the wider environment, including through buffering wildlife sites. 	<p>Biodiversity</p>
<p>The Natural Choice: Securing the Value of Nature. The Natural Environment White Paper. (HM Government, 2011)</p>	<p>Sets out the Government's plans to ensure the natural environment is protected and fully integrated into society and economic growth. Sets out four key aims:</p> <ul style="list-style-type: none"> • protecting and improving our natural environment; • growing a green economy; • reconnecting people and nature; and • international and EU leadership. 	<p>Biodiversity</p>
<p>UK National Ecosystem Assessment (2011)</p>	<p>The first analysis of the UK's natural environment and the benefits it provides to society and economic prosperity. The assessment leads on from the Millennium Ecosystem Assessment (2005) analyses services provided by ecosystem against eight broad habitat types. The ecosystem services provided by these habitat types have been assessed to find their overall condition.</p>	<p>Biodiversity</p>
<p>Ancient Monuments and Archaeological Areas Act (1979)⁴⁶</p>	<p>Provides for nationally important archaeological sites to be statutorily protected as "Scheduled Ancient Monuments" (now Scheduled Monuments)/</p>	<p>Cultural Heritage</p>
<p>Planning (Listed Buildings and Conservation Areas) Act (1990)⁴⁷</p>	<p>Provides specific protection for buildings and areas of special architectural or historic interest</p>	<p>Cultural Heritage</p>

⁴⁶ <http://www.legislation.gov.uk/ukpga/1979/46>

⁴⁷ <http://www.legislation.gov.uk/ukpga/1990/9/contents>

The Government White Paper: Heritage Protection for the 21st Century (2007) ⁴⁸	To put the historic environment at the heart of the planning system.	Cultural Heritage
The Historic Environment: A Force for Our future (2001)	Sets out the intention to protect the historic environment as in contribution to the economy.	Cultural Heritage
Climate Change and the Historic environment (2008)	Sets out English Heritage's current views on the implications of climate change for the historic environment. It recognises that adaptations and mitigation to address the causes and consequences of climate change can have a damaging effect on historic buildings, sites and landscapes.	Cultural Heritage
The UK Climate Change Programme (2006) ⁴⁹ and the Climate Change Act (2008) ⁵⁰	A suite of new and established measures to reduce UK carbon emissions to 15-18% below 1990 levels by 2010. Also promotes anticipatory adaptation. The Climate Change Act legislates for climate change mitigation and adaption. It sets the requirements for the Climate Change Risk Assessment, the National Adaptation Programme and the Adaptation Reporting Power.	Biodiversity, Material Assets and Cultural Heritage
Countryside and Rights of Way Act (2000)	Provides for public access on foot to certain types of land, amends the law relating to public rights of way, increases protection for Sites of Special Scientific Interest and strengthens wildlife enforcement legislation as well as provides for the management of Areas of Outstanding Natural Beauty.	Biodiversity, Human Health

⁴⁸ <https://www.gov.uk/government/publications/heritage-protection-for-the-21st-century-white-paper>

⁴⁹ http://jncc.defra.gov.uk/pdf/BRAG_CC_ClimateChangeTheUKProgramme.pdf

⁵⁰ <http://www.legislation.gov.uk/ukpga/2008/27/contents>

<p>Waste Strategy for England (2007)⁵¹</p>	<p>Promotes best practicable environmental option (BPEO), the waste hierarchy and the proximity principle. The strategy sets out an overall objective for England to achieve less waste, more material recovery, energy from waste and much less landfill.</p>	<p>Material assets</p>
<p>Healthy Lives: Healthy People: Our Strategy for Public Health in England (Department of Health, 2010)</p>	<p>Helping people live longer and reduce health inequalities.</p>	<p>Human Health</p>
<p>Natural Environment and Rural Communities Act (2006)⁵²</p>	<p>Promote and enhance biodiversity. The Act stresses that biodiversity conservation should not be viewed solely as an environmental issue, but a core component of sustainable development, which underpins economic development and prosperity and offers a range of quality of life benefits across a range of local authority service areas.</p>	<p>Biodiversity</p>
<p>National Planning Policy Framework (2012)</p>	<p>Sets out how planning should contribute to sustainable development. The Government is committed to protecting and enhancing the quality of the natural and historic environment, in both rural and urban areas. A high level of protection should be given to most valued townscapes and landscapes, wildlife habitats and natural resources. Those with national and international designations should receive the highest level of protection.</p> <p>Development plan policies should take account of environmental issues such as the potential impact of the environment on proposed developments by avoiding new development in areas at risk of flooding, and as far as possible, by accommodating natural hazards and the impacts of climate change.</p>	<p>All</p>

⁵¹ <http://archive.defra.gov.uk/environment/waste/strategy/strategy07/documents/waste07-strategy.pdf>

⁵² <http://www.legislation.gov.uk/ukpga/2006/16/contents>

	Proactive strategies should be adopted to mitigate and adapt to climate change, taking full account of flood risk and water supply and demand considerations.	Biodiversity, Material Assets and Cultural Heritage
	<p>The planning system should contribute to and enhance the natural and local environment by:</p> <ul style="list-style-type: none"> • recognising the wider benefits of ecosystem services; • minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures. 	Biodiversity
	Heritage assets are an irreplaceable resource and should be conserved in a manner appropriate to their significance.	Cultural Heritage, Material Assets
	Access to high quality open spaces and opportunities for sport and recreation can make an important contribution to the health and well-being of communities.	Biodiversity, Human Health, Material Assets and Cultural Heritage
	<p>The planning system should contribute to and enhance the natural and local environment by:</p> <ul style="list-style-type: none"> • preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability 	Water
	Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere. Local Plans should apply a sequential, risk-based approach to the location of development to avoid where possible flood risk to people and property and manage any residual risk, taking account of the impacts of climate change.	Biodiversity, Cultural Heritage, Material Assets, Water
Laying the Foundations: A Housing Strategy for England (DCLG, 2011)	Supports the delivery of new homes and improvement of social mobility.	Material Assets

Delivering Affordable Housing (DCLG, 2006)	Supports local authorities and others in delivering high quality affordable housing within mixed sustainable communities.	Not applicable
Planning Policy for Traveler Sites (DCLG, 2012)	Set out the following Government aims for traveler sites: <ul style="list-style-type: none"> • That local planning authorities should make their own assessment of need for the purpose of planning; • Ensure that local planning authorities work collaboratively to develop strategies to meet needs through the identification of land for traveler sites. 	Not applicable
Securing the Future: UK Government Sustainable Development Strategy (2005)	This replaced an earlier strategy published in 1999 and aims to enable people to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations	All
Rural White Paper (2000) Our Countryside: The Future – A fair Deal for Rural England.	Promotes sustainable rural economies with the objective of maintaining and stimulating secure access to services and employment as well as conserving and enhancing rural landscapes.	Not applicable
Urban White Paper (2000) Our Towns and Cities: The Future – Delivering an Urban Renaissance	Seeks to encourage more sustainable and attractive urban areas to retain people in urban areas. Sets target of 60% of new homes to be on brownfield sites.	All
The UK Renewable Energy Strategy (DECC, 2009)	Promotes increased use of renewable electricity and heat as well as promotes a low-carbon economy, energy security to address climate change. Sets target of 15% of energy to be from renewable sources by 2020 with reduced CO ₂ emissions by 750 Mt by 2030.	Material assets
Flooding and Historic Buildings (English Heritage, 2010)	This guidance is designed to assist those who live in, own or manage historic buildings that together with their historic fixtures and fittings are threatened by periodic flooding. Advice is provided on preventative measures to minimise flood damage as well as on the inspection, conservation and repair of historic buildings after flooding.	Cultural Heritage

Regional and Local		
River Trent Catchment Flood Management Plan	Catchment flood management plans (CFMPs) consider all types of inland flooding, from rivers, ground water, surface water and tidal flooding, but not flooding directly from the sea, (coastal flooding), which is covered in 'shoreline management plans'. They also take into account the likely impacts of climate change, the effects of how we use and manage the land, and how areas could be developed to meet our present day needs without compromising the ability of future generations to meet their own needs.	All
River Basin Management Plan Humber River Basin District (2009)	River basin management plans (RBMPs) are drawn up for the 10 river basin districts in England and Wales as a requirement of the water framework directive. The plans have been developed through consultations with organisations and individuals. They contain the main issues for the water environment and information on what we all need to do to tackle these issues.	Water
Nottingham City Council 'Biodiversity Position Statement: Ambitious for Wildlife' (2011)	This document reflects NCC's commitment to wildlife and the natural environment, by supporting key policy and legislation at both local and national levels.	Biodiversity
Nottingham City Council (2014) Nottingham City Surface Water Management Plan	The SWMP guidance has been written for local authorities to assist them as they co-ordinate and lead local flood risk management activities.	Water
Nottingham City Council, Gedling Borough Council, Broxtowe Borough Council (2012) Aligned Core Strategy	Broxtowe Borough Council, Gedling Borough Council and Nottingham City Council have been jointly preparing Aligned Core Strategies which cover their combined administrative areas and which set out a spatial strategy and key planning policies for development.	All
Nottingham City Council (2012) Urban Forestry Strategy	This strategy seeks to promote sustainable forestry practices within the urban environment of Nottingham City Council's administrative boundaries.	Biodiversity

Nottingham City Council (2011) Local Transport Plan	The Local Transport Plan (LTP) sets out Nottinghamshire's transport strategy and outlines a programme of measures to be delivered over the short, medium and long term. The strategy covers all types of transport including public transport, walking, cycling, cars and freight.	Material Assets
Nottingham City Council (2011) Preliminary Flood Risk Assessment	Nottinghamshire County Council was required by the Flood Risk Regulations (2009) to prepare a Preliminary Flood Risk Assessment (PFRA). All upper tier local authorities in England have been required to produce a PFRA. The PFRA is a high level screening exercise to identify areas where there is significant flood risk in national terms for reporting to Europe (known as Flood Risk Areas).	All
Nottingham City Council (2011) Nottingham Community Climate Change Strategy 2012 – 2020	This strategy outlines NCC's approach to the mitigation and adaptation of local communities to climate change and its associated impacts.	Climate Change
Nottingham City Council (2010) Greater Nottingham Outline Water Cycle Study	Outline Water Studies enable the identification of any constraints that a proposed development may have upon the water cycle and how these can be resolved.	Water
Nottingham City Council / Environment Agency (2008) Greater Nottingham Strategic Flood Risk Assessment	The purpose of this report is to provide a map-based planning tool that can be used by planning officers to inform the Local Development Framework (LDF) process and individual planning applications; inform and anticipate the EA's response to various stages of the planning process; help steer new development away from the areas of highest risk; and, assist with emergency planning.	All
Nottingham City Council / Environment Agency (2008) River Leen & Day Brook Strategic Flood Risk Assessment	The principal aim of the study is to provide NCC with information on flood risk which will inform the planning process	Water

<p>Nottingham City Council River Leen Access and Biodiversity Study</p>	<p>The purpose of this document is to set out a vision and action plan to raise awareness of the Leen corridor within the Nottingham City area. It will aid the coordination of projects with complimentary objectives in order to attract funding to develop a multi-user path and improve biodiversity along the banks and watercourse of the Leen.</p>	<p>Water and Biodiversity</p>
<p>Nottingham City Council Breathing Space Revitalising Nottingham's Open and Green Spaces 2010 – 2020</p>	<p>Provides a strategic approach towards the future planning, development and management of the open and green spaces network within the City in order to make a contribution to its citizens' quality of life.</p>	

APPENDIX B – OVERALL ENVIRONMENTAL BASELINE

B1 Biodiversity

Policy Context

Sites of a European status are protected under the Habitats Directive, while national legislation (the Wildlife and Countryside Act (1981) (as amended)) protects Sites of Special Scientific Interest (SSSI) and listed species. The local authority is also under a duty to protect and promote biodiversity arising from the Natural Environment and Rural Communities (NERC) Act (2006).

In March 2010, the European Council issued a new target to halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020 and to support efforts to avert global biodiversity loss. There are six main targets and 20 actions. Of the six targets, those considered relevant to the Strategies cover:

- Full implementation of EU nature legislation to protect biodiversity;
- Better protection for ecosystems, and more use of green infrastructure;
- Tighter controls on invasive alien species; and,
- A bigger EU contribution to averting global biodiversity loss.

The NPPF states that impacts from development on biodiversity should be minimised and net gains should be provided where possible. Coherent ecological networks that are more resilient to current and future pressures should be established.

The Nottinghamshire Local Biodiversity Action Plan (NLBAP)⁵³ was first published in 1998 and is subjected to periodic review. The NLBAP has been produced by the partnership of organizations which form the Nottinghamshire Biodiversity Action Group. The focus of the NLBAP is on conserving and enhancing the biodiversity within its study area. In October 2011 NCC adopted the updated Biodiversity position statement: Ambitious for wildlife, the statement made reinforces the council's commitment to wildlife and the natural environment.⁵⁴

Environmental Protection Objectives

The following objectives have been identified as relevant to this sustainability topic from a review of international, EU and national objectives:

Bern Convention on the Conservation of European Wildlife and Natural Habitats, 1979⁵⁵:

- To protect endangered species and their habitats.

Wild Birds Directive 2009/147/EC:

- To protect all naturally occurring wild bird species and their habitats, with particular protection of rare species.

Bonn Convention on the Conservation of Migratory Species of Wild Animals, 1979:

- To protect threatened animals that migrate across national boundaries and/or the high seas.

⁵³ Nottinghamshire Local Biodiversity Action Plan, Nottinghamshire Biodiversity Action Group

⁵⁴ Nottingham City Council biodiversity position statement 2011

⁵⁵ <http://conventions.coe.int/Treaty/en/Treaties/Word/104.doc>

Habitats Directive 92/43/EEC, 1992⁵⁶:

- To protect important natural habitat (listed in Annex I, amended in Directive 97/62/EC) and species (listed in Annex II), using measures to maintain or restore their "favourable conservation status", principally through the designation of Special Protection Areas and Special Areas of Conservation, but also (through land-use and development policies) by management of the landscape features of importance to wildlife outside SPAs and SACs; and,
- To safeguard species needing strict protection (Annex IV). This Directive is transposed into UK law through the Conservation of habitats and Species Regulations 2010.

The EU Sixth Environmental Action Plan 2002⁵⁶:

- Focuses attention on four priority areas for action: Tackling climate change; nature and biodiversity; environment and health; and natural resources and waste.

A 7th Environmental Action Plan is currently being developed. The Commission proposes to include nine priority objectives, which will include three thematic priority objectives intended to protect nature and strengthen ecological resilience, boost sustainable resource-efficient low-carbon growth and effectively address environment-related threats to health.

The Wildlife and Countryside Act 1981⁵⁷ (as amended by the Countryside Rights of Way Act 2000):

- Part I is concerned with the protection of wildlife;
- Part II relates to the countryside and national parks (and the designation of protected areas);
- Part III covers public rights of way;
- Part IV deals with miscellaneous provisions of the Act.

Baseline Review

The city has over 350 Hectares of natural and semi natural area including woodlands, river corridors and postindustrial land, most of which are accessible to the public. Within the city boundary there are:-

- 3 Nationally important Sites of Special Scientific Interest (SSSIs) including Colwick Cutting and Holme Pit;
- 62 LWS covering 670 hectares;
- 13 Designated Local Nature Reserves (LNRs) including Colwick Woods, Beeston Sidlings and Bullwell Hall Park Meadows; and,
- Around 14% of Nottingham is covered by trees with 100 ha of woods⁵⁸, and there is 1,920 hectares of open space equating to 25.7% of the City.

⁵⁶ <http://ec.europa.eu/environment/newprg/intro.htm>

⁵⁷ http://www.legislation.gov.uk/ukpga/1981/69/pdfs/ukpga_19810069_en.pdf

⁵⁸ Nottingham City Council Urban Forestry Strategy

Site of Special Scientific Interest (SSSI) – a SSSI is a conservation designation denoting a protected area in the United Kingdom. SSSIs are the basic building block of site-based nature conservation legislation and most other legal nature/geological conservation designations in Great Britain are based upon them.

Local Nature Reserves (LNR) are allocated for their wildlife, ecology, education or public enjoyment. All district and county councils have powers to acquire, declare and manage LNRs

Sites of Importance for Nature Conservation (SINC) are locally important sites, usually owned and managed by others but designated by NCC for their contribution to local nature conservation.

Colwick Cutting SSSI

The Colwick Cutting SSSI is the only geological SSSI in the Nottingham City Council boundary. The site is the type section of the Triassic Colwick Formation comprising mudstones, siltstones, and sandstones in coarsening-upwards units. There is a variety of sedimentary structures including ripple marks, wavy bedding, halite pseudomorphs and desiccation cracks. The facies likely represent marine intertidal conditions⁵⁹.

Holme Pit SSSI

Holme Pit comprises a central pond surrounded by species rich marsh supporting an abundance of plants such as common reed (*Phragmites australis*), greater pond sedge (*Carex riparia*), and reed sweet grass (*Glyceria maxima*). Holme Pit and the adjacent marshes provide valuable habitats for a variety of passage, wintering and breeding bird species, whilst reedbeds act as valuable roosting areas⁶⁰.

Local Nature Reserves

Local nature reserves within the Nottingham City Administrative Boundary are home to a wide range of flora and fauna including a wildflower meadows; woodlands; and grasslands which combine to support large populations of insects, mammals and birds, many of which are designated as red list species⁶¹.

The natural environment is essential in managing the challenges of climate change, trees help shade streets in summer and vegetation helps intercept flood flows, green space can be used to help store/retain water during periods of rain and flooding.

Additionally, as reiterated by Natural England in their consultation responses Geodiversity assets within Nottingham City Council should be considered. This is originally stipulated within paragraph 109 the NPPF 2012 which states: “*the planning system should contribute to and enhance the natural environment by protecting and enhancing... geological conservation interests*”.

Likely Future Conditions

Within urban areas like Nottingham the pressures upon green space and areas of wildlife value will increase as demand and development increases. However by emphasising the multiple benefits for example flood storage, interception of flows and/or recreation and health, greater value can be placed upon such sites.

⁵⁹ http://www.sssi.naturalengland.org.uk/citation/citation_photo/1003765.pdf

⁶⁰ http://www.sssi.naturalengland.org.uk/citation/citation_photo/1000826.pdf

⁶¹ <http://www.wildlifeinthecity.org/green-space/colwick-woods/>

Key Environmental Issues

Overall, biodiversity on both designated and non-designated sites should be protected and enhanced.

B2 Cultural, Architectural and Archaeological Heritage

Policy Context

At the national level, the Government White Paper: Heritage Protection for the 21st Century (2007) seeks to put the historic environment at the heart of the planning system. The NPPF recognises that heritage assets are an irreplaceable resource and should be conserved in a manner appropriate to their significance, in order that they can be enjoyed for their contribution to the quality of life of current and future generations. The NPPF defines significance as “*the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset’s physical presence, but also from its setting.*”

Heritage assets are defined by Government as “a building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest (NPPF Annex 2 Glossary). Some heritage assets are designated under legislation such as Scheduled Monuments, Listed Buildings, Registered Parks and Gardens and Conservation Areas. Some undesignated heritage assets may also be recognized by Local Planning Authorities as having a degree of local interest or significance.

Cultural heritage is generally and most easily divided into three key areas comprising:

- Archaeology;
- Historic buildings; and,
- Historic landscape.

Environmental Protection Objectives

World Heritage Convention (1972)

- Calls for the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage sites.

The Convention for the Protection for the Architectural Heritage of Europe (The Granada Convention):

- Reinforces and promote policies for the conservation and enhancement of Europe’s heritage.

The European Convention on the Protection of Archaeological Heritage (The Valetta Convention):

- Makes the conservation and enhancement of the archaeological heritage one of the goals of urban and regional planning policies. It is concerned in particular with arrangements to be made for co-operation among archaeologists and town and regional planners in order to ensure optimum conservation of archaeological heritage.

Ancient Monuments and Archaeological Areas Act (1979)⁶²:

- Provides for nationally important archaeological sites to be statutorily protected as “scheduled ancient monuments” (now Scheduled Monuments).

Planning (Listed Buildings and Conservation Areas) Act (1990)⁶³:

- Provides specific protection for buildings and areas of special architectural or historic interest.

Baseline Review

Nottingham has a rich and distinctive historic environment which makes a crucial contribution to the City's identity. Historic buildings, monuments, sites, areas and landscapes are an irreplaceable resource. The heritage of Nottingham includes, Nottingham Castle, medieval city wall, caves and parks and gardens.

Within the City there are a wide variety of designated heritage assets:

Listed Buildings – There are around 800 listed buildings and their settings including 9 grade I listed buildings and 34 listed at grade II*

Conservation Areas – There are 31 Conservation Areas

Scheduled Ancient Monuments – there are ten of these:

- Cellar under 8 Castle Gate
- Dovecote east of Home Farm
- Rock cut houses north of Castle Boulevard
- Rock cut houses south of Nottingham Castle
- Caves at Drury Hill
- Caves under 3-7 Middle Pavement
- Medieval City wall
- Nottingham Castle
- St John Baptist's Church and graveyard, Colwick
- Lenton Priory

Nottingham Caves - Nottingham has approximately 550 caves listed in the City Council's Historic Environment Record. All of these are manmade and cut into the natural sandstone bedrock. Caves have existed in Nottingham since Saxon times with extensive cave development through the medieval and modern periods. They are largely concentrated in the city centre, with small groups and individual caves in several of the outer neighbourhood areas.

Nottingham's caves are central to the historic environment of the City and Nottingham has more artificial caves than any other British City. Their antiquity, functions, extent and number make them

⁶² <http://www.legislation.gov.uk/ukpga/1979/46>

⁶³ <http://www.legislation.gov.uk/ukpga/1990/9/contents>

a unique feature nationally. They are an important heritage asset and complement development, encourage tourism and provide research opportunities.

Historic Parks and Gardens - Within the City of Nottingham there are nine entries on English Heritage's 'Register of Parks and Gardens of Special Historic Interest in England'.

The Arboretum, General Cemetery, Highfields Park, Memorial Gardens at Trent Embankment and the parkland at Clifton Hall are Grade II registered while the Church Cemetery, Hungerhill Allotments (including Stonepit Coppice and Gorse Close Gardens), Wollaton Park, and Bagthorpe Gardens are Grade II* registered. Although it does not afford statutory protection, entry on the Register is a material consideration in the determination of planning applications.

Likely Future Conditions

There are unlikely to be substantial changes to the historic and cultural heritage environment given its importance to NCC. Built heritage conservation and cultural heritage assets are likely to remain an important economic, social and environmental feature of Nottingham.

Key Environmental Issues

The key environmental issues identified are:

- Some heritage assets are likely to be at risk of flooding, which has the potential to compromise their inherent value; and
- Any proposed flood alleviation measures have the potential to impact positively and / or adversely on the historic environment.

B3 Human Health

Policy Context

At the national level, the UK Government Sustainable Development Strategy (2005)⁶⁴ aims to enable people to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations.

The NPPF recognises that access to high quality open spaces and opportunities for sport and recreation can make an important contribution to the health and well-being of communities.

The Health Protection Agency has published health advice following floods⁶⁵ which outlines that the main threats to health during and immediately after a flood are drowning and injuries caused by accidents in flowing water. In addition to this, mental health and wellbeing can be affected after the flood event as can other consequences arising from the loss of employment should businesses not recover from a flood.

Baseline Review

The health of people in Nottingham is generally below the England average. Deprivation is higher than average and 21,590 children live in poverty. Life expectancy is 9.2 years lower for men and 8.4 years lower for women in the most deprived areas than in the least deprived areas. Life expectancy for both men and women is lower than the England average.

⁶⁴ <https://www.gov.uk/government/publications/securing-the-future-delivering-uk-sustainable-development-strategy>

⁶⁵ <http://www.hpa.org.uk/Topics/EmergencyResponse/ExtremeWeatherEventsAndNaturalDisasters/EffectsOfFlooding/>

The city ranks as the 20th out of 326 districts in England in terms of the 2010 Index of Multiple Deprivation.⁶⁶ Over the last 10 years, all-cause mortality rates have fallen. The early death rates from cancer and from heart disease and stroke have fallen but remain at a higher level than the England average.

About 21.9% of Year 6 children are classified as obese and a lower percentage than average of pupils spend at least three hours each week on school sport. Levels of teenage pregnancy and GCSE attainment are worse than the England average.

The estimated levels of adult smoking, rates of hip fractures, road injuries and deaths, smoking related deaths and hospital stays for alcohol related harm are higher than the England average.

Priorities in Nottingham include teenage pregnancy, smoking and early deaths from heart disease and stroke⁶⁷.

Likely Future Conditions

The health and levels of deprivation of people in Nottingham are likely to continue to be worse than the national average.

Key Environmental Issues

The key environmental issues identified are:

- Flooding can result in effects on both physical and psychological health of individuals, which could exacerbate existing health issues. Repeated flooding can be a particular issue in relation to psychological health and well-being; and
- Flooding can result in road closures in the past which exacerbates pressure on emergency services and aid workers trying to help the affected areas.

B4 MATERIAL ASSETS

Policy Context

At the national level, Securing the Future: UK Government Sustainable Development Strategy (2005) seeks to enable people to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations. The NPPF sets out how planning should contribute to sustainable development. And states that a high level of protection should be given to the most valued townscapes and landscapes; those with national and international designations should receive the highest level of protection. It also recognises that heritage assets are an irreplaceable resource and should be conserved in a manner appropriate to their significance and that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk. Where development is necessary, it should be made safe without increasing flood risk elsewhere. Local Plans should apply a sequential, risk-based approach to the location of development to avoid where possible flood risk to people and property. They should also manage any residual risk, taking account of the impacts of climate change.

⁶⁶ Nottingham health and well being strategy 2013 - 2016
⁶⁷ www.apho.org.uk/resource/view.aspx?RID=105259

Baseline Review

The latest estimate of the City's resident population is 308,700, having risen by almost 5,000 since 2011. It is estimated that this may rise to around 309,100 by 2016 and 321,300 by 2021⁶⁸.

Significant material assets include:

- Infrastructure links which include the railway and the railway station, the tram system and the highway network
- Elements of local government and the law system
- Hospitals, police and fire stations
- Schools and institutions of higher education
- Water supply and sewerage
- Energy and telecommunication
- Heritage (covered in section 5)

Likely Future Conditions

It is likely that the material assets in Nottingham will continue to develop and thrive. With climate change this may put pressure upon land resources, reducing the flood risk alternatives and options available

Key Environmental Issues

- Protection of material assets to ensure the continued wellbeing of the local economy and the people of Nottingham;
- Emphasise the positive benefits that sustainable development can make to economic and social development.

B5 LANDSCAPE

At the international level, the European Landscape Convention (2000)⁶⁹ promotes various actions at the landscape scale ranging from strict conservation through protection, management and improvement to actual creation.

At the national level, the Government White Paper: *Heritage Protection for the 21st Century* (2007)⁷⁰ seeks to put the historic environment at the heart of the planning system. The NPPF (2012) sets out how planning should contribute to sustainable development and commits to protect and enhance the quality of the natural environment, in both rural and urban areas. A high level of protection should be given to most valued landscapes and those with national and international designations should receive the highest level of protection.

At the regional and local level the East Midlands Regional Landscape Character Assessment (2010)⁷¹ and The Greater Nottingham Landscape Character Assessment (2009) have been produced.

Environmental Protection Objectives

European Landscape Convention (2000)⁷²:

⁶⁸ <http://www.nottinghaminsight.org.uk/insight/partnerships/voluntary/population.aspx>

⁶⁹ http://www.coe.int/t/dg4/cultureheritage/heritage/Landscape/default_en.asp

⁷⁰ <https://www.gov.uk/government/publications/heritage-protection-for-the-21st-century-white-paper>

⁷¹ East Midlands Regional Landscape Character Assessment Incorporating the Peak District National Park and Lincolnshire Wolds AONB Shaping the Region's Future Landscape April 2010 Natural England

- Commits the UK to "recognise landscapes in law as an essential component of people's surroundings, an expression of the diversity of their shared cultural and natural heritage, and a foundation of their identity".

Planning (Listed Buildings and Conservation Areas) Act (1990)⁷³:

- Provides specific protection for buildings and areas of special architectural or historic interest.

Countryside and Rights of Way Act (2000):

- Create a framework for public access to the countryside;
- Provides greater protection to Sites of Special Scientific Interest (SSSIs) and new arrangements for the management of AONBs;
- Provides for the possibility of Conservation Area Boards for AONBs;
- Management Plans receive a statutory status; and,
- Section 85 requires public bodies to have regard to the purposes of designations of AONBs.

Baseline Review

In a densely populated area like Nottingham, it is important to protect open spaces and there are many high quality open spaces in the City. Whilst it is important to protect open spaces, they can vary significantly in quality and type. Some suffer from a range of problems including poor access, vandalism and anti-social behaviour, lack of maintenance resources and inappropriate location. In some areas, the type of provision does not meet identified needs, resulting in open spaces being under-used and seen as being of limited value to the local community⁷⁴

NCC looks after 127 parks and gardens across the city and 990 hectares of open space and has been awarded 19 Green Flag award winning sites and 12 Community Green Flag awards. These include:

- The Arboretum Nottingham's oldest and most central park,
- Nottingham Castle,
- Wollaton Hall and Wollaton Park Lake
- Newstead Abbey,
- Colwick Country Park,
- Highfields Lake,
- Forest Recreation Ground,
- Woodthorpe Grange Park.

It is not within the scope of the SEA to include a full assessment of the potential impacts on local landscape character as an SEA is a high level report which does not assess individual actions which arise from the implementation of the strategy. However, should an action be derived which has the potential to affect (either adversely or beneficially) the local landscape character further assessments such as an environmental impact assessment may commence. This may comprise the use of a landscape character assessment and may utilize the *Guidelines for Landscape and Visual Impact*

⁷² <http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm>

⁷³ http://www.legislation.gov.uk/ukpga/1990/9/pdfs/ukpga_19900009_en.pdf

⁷⁴ NCC Land and Planning Policies local plan part 2 September 2013

Assessment. The assessment must consider cumulative effects and National Character Areas (NCAs) which fall within Nottingham such as:

- Sherwood;
- Nottingham, Derbyshire and Yorkshire Coalfield; and,
- Trent and Belvoir Vales.

Additionally any assessments should consider strategic impacts, the identification of opportunities and areas for enhancement. Preferably and where possible, there should be linkages made with other plans and partnerships such as:

- Biodiversity action plans;
- Local nature partnerships;
- Rights of way improvement plans; and,
- Green Infrastructure strategies.

Likely Future Conditions

Within urban areas like Nottingham the pressures upon open space and areas of for recreational value will increase as demand and development increases. However by emphasising the multiple benefits for example flood storage, interception of flows and/or recreation and health, greater value can be placed upon such sites.

Key Environmental Issues

The landscape of the city and its constituent parts is significant to the city, any alterations for flood defence options will have to be considered in light of the impact upon features of landscape value and the overall impact upon the nature of the city.

B6 Water

Policy Context

The Water Framework Directive (2000/60/EC) promotes an integrated and coordinated approach to water management at the river basin scale. One of its key objectives is the requirement to prevent deterioration in status and achieve at least Good Ecological Status in inland and coastal waters following deadlines ranging from 2015 to 2027. The WFD also requires all Artificial or Heavily Modified Water Bodies to achieve Good Ecological Potential.

At the national level, River Basin Management Plans (RBMPs) have been prepared by the Environment Agency and is the preferred method for implementing the WFD objectives on designated waterbodies within the UK. RBMP's focus on the protection, improvement and sustainable use of the water environment by setting out environmental objectives to be achieved for each WFD designated waterbody.

Environmental Protection Objectives

Urban Wastewater Treatment Directive 1991:

- The Directive aims to protect the environment from the adverse effects of wastewater discharges;
- All urban waste water must undergo secondary treatment or equivalent, in particular for all discharges from agglomerations of more than 15,000 population equivalent (i.e. with a 5-day BOD of 60g of oxygen per day) and all discharges to freshwater and estuaries from agglomerations between 2,000 and 10,000 population equivalent.

Groundwater (England and Wales) Regulations 2009:

- Seeks to prevent or limit the input of pollutants in to groundwater.

Water Framework Directive 2000:

- Aims to improve water quality and promote the sustainable use of all UK waterbodies, including coastal waters, estuaries and all inland waterbodies;
- It requires all UK river basins to reach "good status" by 2015, through demanding environmental objectives, including chemical, biological and physical targets;
- Three types of UK water quality standards are being developed (a formal classification instrument should be completed in late 2007): Priority substances (and Priority Hazardous Substances); Specific Pollutants; and Physico-chemical pollutants.

Waterways for Tomorrow 2000:

- DEFRA's aims for the inland waterways are to see an improving quality of infrastructure; a better experience for users through more co-operation between navigation authorities; and increased opportunities for all through sustainable development.

Making Space for Water (2004)⁷⁵

Flood and Water Management Act (2010)⁷⁶ National legislation

- Which established lead local flood authorities and requirement for the production of strategies for local flood risk

Nottingham Surface Water Management Plan (2014)

- Local plan falling under the 2010 act

Greater Nottingham Strategic Flood Risk Assessment (2008)

- Review of flood risk across six councils/districts including Nottingham City Council.

⁷⁵ Making Space for Water Department for Environment, Food and Rural Affairs (2004)

⁷⁶ Flood and Water Management Act HM Government (2010)

Baseline Review

The Greater Nottingham SFRA 2008 identified the following flood risk:

Council District/Borough	SFRA Comments
<i>Broxtowe</i>	<p><i>Fluvial risk from:</i></p> <ul style="list-style-type: none"> • <i>Beauvale Brook on the right bank near cricket pitch</i> • <i>Boundary Brook upstream of trowel Road, Devonshire Drive, Roehampton Drive</i> • <i>River Erewash- Stapleford</i> • <i>River Trent- Beeston, Toton, Stapleford, Ryelands</i>
<i>Gedling</i>	<p><i>Fluvial flood risk from:</i></p> <ul style="list-style-type: none"> • <i>Ouse Dyke- north side of Main Road</i> • <i>River Leen- Papplewick Lane</i> • <i>Day Brook- Thackerys Lane, Knighton Road, Mansfield Road</i> • <i>River Trent- Colwick, Netherfield, Stoke Bardolph, Burton Joyce</i> • <i>Surface Water flooding is a serious concern and development can worsen flood risk downstream.</i>
Nottingham City	<p>Fluvial flood risk from:</p> <ul style="list-style-type: none"> • River Trent- City centre, Lenton • Fairham and Nethergate Brook • Extensive flooding along the Leen corridor • Development upstream in Gedling and Hucknall can potentially increase flood risk if surface water isn't managed
<i>Rushcliffe</i>	<p><i>Fluvial flood risk from:</i></p> <ul style="list-style-type: none"> • <i>River Trent- West Bridgford, Holme Pierrepont</i> • <i>River Smite- Aslockton, Barnstone</i>
<i>River Leen and Day Brook</i>	<ul style="list-style-type: none"> • <i>Major overtopping of flood defences in Bulwell, Basford, Bobbers Mill, Radford, Sherwood</i> • <i>Majority of flooding on River Leen and Day Brook attributed to urban development.</i> • <i>Need to decrease peak flow volume and run off rates</i> • <i>Groundwater flooding experienced in basements in Basford</i>
<i>Ashfield</i>	<ul style="list-style-type: none"> • <i>Main fluvial flood risk associated with Baker Lane Brook and River Leen</i> • <i>Development in Hucknall could significantly increase flooding downstream in</i> • <i>Nottingham City</i>

Fluvial

Details of the water courses both main river and ordinary water courses are provided in section 2 and shown on figure 2.1. The Trent Left Bank Flood Alleviation Scheme was completed in 2012. The £45 million scheme reduces the risk of flooding to 16,000 homes and businesses along a 27 kilometre stretch of the River Trent, from Sawley to Colwick. It also provides additional protection to key infrastructure at the heart of the communities along the Trent. The new scheme reduces the risk of flooding to one per cent (1 in 100 chance) in any given year. There remains some residual flood risk from the river Trent plus a risk from local rapidly responding heavily modified water courses such as the River Leen and Day Brook. These water courses are more vulnerable to local changes for example increased urbanisation increasing the local runoff or localised blockages in bridges and culverts.

Pluvial/Surface Water Flooding and Overland Flow

During periods of prolonged rainfall events and sudden intense downpours, overland flow generated from adjacent higher ground may flow across land and 'pond' in low-lying areas without draining into watercourses, surface water drainage systems or the ground. Intense rainfall that is unable to infiltrate into the ground or enter drainage systems can quickly run overland and result in local flooding.

There are vast expanses of paved surfaces in urban areas of the City, which can cause large amounts of surface water to accumulate in low lying areas and result in flash flooding.

The topography of the area is varied, ranging from the flat expanses of the River Trent floodplain to the moderate and steep gradients of Mapperley Park, Top Valley and Sherwood. Due to the urban nature of the study area, the areas of steep topography and valleys are often unnoticed but they are a significant feature that affects surface water flood risk in the City.

One of the main issues with pluvial flooding is that relatively small changes to hard surfacing and surface gradients can cause flooding (garden loss and reuse of brownfield sites for example). This type of flooding is frequently experienced and often very destructive and it is possibly a more serious problem than suggested by historic records. Surface water flooding does not need a watercourse in close proximity to occur and is exacerbated by areas of highly impermeable hard standing such as tarmac, or low permeability soils and geology (such as clayey soils). In developed areas, this flood water can be polluted with domestic sewage where foul sewers surcharge and overflow.

Groundwater Flooding

The majority of the study area is underlain by a major aquifer that carries groundwater that is used as drinking water supply. Some parts of the City such as Old Basford and Sneinton suffer the effects of a high groundwater table, resulting in water ingress into cellars and waterlogged land.

Water Quality

Water quality in urban water courses is often under stress, with surface run off from roads, industrial and brownfield sites all providing potential pollutants and over flow from combined sewer and surface water discharges. Inputs can be in the form of direct pollutants toxic to aquatic and /or riparian life or may as indirect pollutants for example excessive silt running of building sites can deplete oxygen and smother plants and animals in the water body and lead to aquatic impacts.

The addition of sustainable urban drainage systems can provide opportunities to reduce direct and indirect pollution inputs.

Flooding whether pluvial or fluvial can lead to overflowing and backing up sewerage system especially in areas of older sewers, which were not designed for large flood flows. Flooding from sewers can lead to potential human health problems and environmental damage.

Likely Future Conditions

Flood risk in Nottingham is likely to continue to be an issue in some locations and there is the potential for increased flood risk over time as a result of climate change and increased incidences of extreme weather events. Future development without consideration of the potential impacts upon water be that, increased run off and increased pollution would add to the future risks.

The WFD requires that all waterbodies meet good ecological status, or good ecological potential, by 2027 and therefore it could be assumed that the ecological status of the waterbodies in Nottingham will improve over time in order to meet this requirement. Flooding is likely to have consequential impacts upon groundwater and surface water and potential exists for ecosystem impacts due to land use change.

Key Environmental Issues

The key environmental issues identified are:

- Local flooding can contribute to high levels of nutrients and pollutants in WFD waterbodies;
- Impacts upon surface water quality, groundwater quality and hydromorphology may arise as a consequence of future flooding or flood risk mitigation;
- Careful, sensitive and innovative design so sustainable solutions can be developed to the benefit of all; and,
- Sustainable solutions to include Sustainable Urban Drainage and innovative localised solutions e.g. Nottingham Green Streets retrofit solutions and rain gardens.

APPENDIX C RELEVANT WATER DIRECTIVE WATERBODIES STATUS AND OBJECTIVES

Waterbody ID	Waterbody Name	Hydro-morphological Designation	Current Status	Ecological Status	WFD elements less than Good	Status Objective
GB104028052860	Day Brook from Source to River Leen	Heavily Modified	Moderate	Moderate	Ammonia, Dissolved Oxygen, Phosphate, & Specific Pollutants.	Good Potential by 2027
GB104028052880	Leen from Source to Day Brook	Heavily Modified	Moderate	Moderate	-	Good Potential by 2027
GB104028053110	Trent from Soar to The Beck	Heavily Modified	Moderate	Moderate	Phosphate (Current)	Good Potential by 2027
GB104028053150	Fairham Brook Catchment (trib of Trent)	Not Designated A/HMWB	Poor	Poor	Phytobenthos, Phosphate	Good Status by 2027
GB104028053250	Leen from Day Brook to River Trent	Heavily Modified	Moderate	Moderate	-	Good Potential by 2027

APPENDIX D CONSULTATION RESPONSES

A total of seven consultation responses were received from the statutory consultees, three internal responses from Nottingham City Council, and a response from both Severn Trent Water and Nottinghamshire Wildlife Trust. The statutory consultation responses and the actions taken in response to each comment have been outlined below.

Comments Received	Actions Taken
Environment Agency	
No Comments Received	
Natural England	
<p>Biodiversity The baseline data in the SEA should consider the presence of Protected species and Priority species (including Annex1 birds and regularly occurring migratory birds).</p> <p>Proposals within the FRMS could affect habitats that support either domestic or European Protected Species. Areas that are known to be wildlife habitats or corridors should be highlighted and scoped into the SEA to be considered.</p>	<p>Nottingham City Council does not comprise any sites of European Importance. However, Nottingham does have SSSIs. Therefore information on the SSSI and the species in which they support has been provided in the updated baseline information for biodiversity.</p>
<p>Landscape The SEA should include a full assessment of the potential impacts on local landscape character using landscape assessment methodologies. We encourage the use of Landscape Character Assessment (LCA), based on the good practice guidelines produced jointly by the Landscape Institute and Institute of Environmental Assessment in 2013. LCA provides a sound basis for guiding, informing and understanding the ability of any location to accommodate change and to make positive proposals for conserving, enhancing or regenerating character, as detailed proposals are developed. Natural England supports the publication <i>Guidelines for Landscape and Visual Impact Assessment</i>, produced by the Landscape Institute and the Institute of Environmental Assessment and Management in 2013 (3rd edition). The methodology set out is almost universally used for landscape and visual impact assessment. The assessment should also include the cumulative effect of the development with other relevant existing or proposed developments in the area. In this context Natural England advises that the cumulative impact assessment should include other proposals currently at Scoping stage. Due to the overlapping timescale of their progress through the planning system, cumulative impact of the proposed development with those proposals currently at Scoping stage would be likely to be a material consideration at the time of determination of the planning application.</p> <p>Natural England suggests that the baseline incorporates the National Character Areas (NCAs) which fall within Nottingham. The NCAs that would be beneficial to the baseline are:</p> <ul style="list-style-type: none"> • Sherwood • Nottinghamshire, Derbyshire and Yorkshire Coalfield • Trent and Belvoir vales 	<p>The following is a response to the comments received from Natural England in regards to the landscape baseline derived and an excerpt from Appendix B:</p> <p>It is not within the scope of the SEA to include a full assessment of the potential impacts on local landscape character as an SEA is a high level report which does not assess individual actions which arise from the implementation of the strategy. However, should an action be derived which has the potential to affect (either adversely or beneficially) the local landscape character further assessments such as an environmental impact assessment may commence. This may comprise the use of a landscape character assessment and may utilize the <i>Guidelines for Landscape and Visual Impact Assessment</i>. The assessment must consider cumulative effects and National Character Areas (NCAs) which fall within Nottingham such as:</p> <ul style="list-style-type: none"> • Sherwood;

<p>NCA profiles provide an invaluable resource for understanding wider landscape context, and highlighting opportunities for enhancement of the natural environment. The profiles can be found following the link below;</p> <p>http://www.naturalengland.org.uk/publications/nca/westmidlands.aspx</p> <p>The assessment should consider strategic impacts identifying opportunities and areas for enhancement or strategic projects. Ideally there should be linkages (where applicable) BAPS, LNPS, NCAs, ROWIPs and Green Infrastructure strategies. Further evidence and advice on green infrastructure, including the economic benefits of GI can be found on the Natural England Green Infrastructure web pages.</p>	<ul style="list-style-type: none"> • Nottingham, Derbyshire and Yorkshire Coalfield; and, • Trent and Belvoir Vales. <p>Additionally any assessments should consider strategic impacts, the identification of opportunities and areas for enhancement. Preferably and where possible, there should be linkages made with other plans and partnerships such as:</p> <ul style="list-style-type: none"> • Biodiversity action plans; • Local nature partnerships; • Rights of way improvement plans; and, • Green Infrastructure strategies.
<p>Access and Recreation</p> <p>Natural England notes that the sustainability issues section has not included access to the countryside as a topic. Natural England encourages any proposal to incorporate measures to help encourage people to access the countryside for quiet enjoyment. Measures such as reinstating existing footpaths together with the creation of new footpaths and bridleways are to be encouraged.</p> <p>Links to other green networks and, where appropriate, urban fringe areas should also be explored to help promote the creation of wider green infrastructure. Relevant aspects of local authority green infrastructure strategies should be incorporated where appropriate.</p>	<p>A note on access has been added to the introductory section of the sustainability section.</p>
<p>Natural England is happy with the receptors which have been scoped out of the SEA. However, they did question the decision to scope out soil.</p>	
<p>Objectives</p> <p>The biodiversity section mentioned that there are 'more than 70 geological and biological Sites of Importance for Nature Conservation (SINCS)' within Nottingham. The biodiversity objective should therefore go further and make reference for the need to consider Geodiversity assets within the Strategy area. Par 109 from the NPPF sets out that 'the planning system should contribute to and enhance the natural environment by protecting and enhancinggeological conservation interests.'</p>	<p>Geodiveristy has been considered within the biodiversity section. However, as soil and geology has been scoped out of the SEA the input is minimal.</p>
<p>Indicators</p> <p>It is important to factor in the use of indicators in the approach to SEA. The use of indicators will monitor the success of the SEA objectives. They will help assess the impacts of the Plan and its actions as well as provide an indication of the level of sustainability achieved by the Plan and will provide an indication of the need for further enhancement or mitigation measures within the Plan.</p>	<p>As aforementioned, it is not within the scope of the SEA to include a full assessment of the potential impacts upon the local environment from the delivery of the Strategy as exact plans and programmes remain unknown at</p>

<p>This will be an iterative process to ensure that Plan, if refined to improve performance against sustainability objectives, does not then have an adverse effect on the environment. Below is a suggested indicator which could be of use as the SEA progresses. Protected species – Quantified data might include numbers of flood risk related applications where protected species are considered, numbers with conditions imposed to ensure working practices and works to protect/ enhance protected species, and numbers of planning applications which result in need for protected species license in order to be carried out . This will indicate that protected species are being given appropriate consideration within the planning system and begin to build up information on their occurrence within the plan area.</p>	<p>this stage. Should a plan be devised which may affect the environment (either adversely or beneficially) an assessment should occur at that stage, through the Environmental Impact Assessment framework for instance.</p>
<p>English Heritage</p> <p>English Heritage acknowledges that the current review will concentrate on those policies, plans, programmes that are most relevant to the flood risk management and to the implementation of the strategy. Relevant historic environment considerations, however, should still be fully taken into account in the review as for example:</p> <p>At the national level:</p> <ul style="list-style-type: none"> · The National Planning Policy Framework recognises that the protection and enhancement of the historic environment is integral to achieving sustainable development. · The Flood Risk Regulations 2009 include a requirement to have regard to the desirability of reducing the adverse consequences of flooding for the environment (including cultural heritage). · The Flood and Water Management Act 2010 includes a requirement for local authorities, highway agencies and Internal Drainage Boards to contribute towards sustainable development when exercising their flood and coastal erosion risk management functions¹. Supporting guidance² on this duty includes, within its definition of sustainable flood and coastal erosion risk management, improving the resilience of the natural, historic, built and social environment to current and future risks, as well as protecting natural and heritage assets and enhancing the environment where it is most degraded. · The National Flood and Coastal Erosion Risk Management Strategy for England includes a guiding principle on achieving multiple benefits, such as enhancing and protecting the built, rural and natural environments, cultural heritage and biodiversity and in all instances flood and coastal risk management should avoid damaging the environment, including the historic environment. <p>At the local level:</p> <ul style="list-style-type: none"> · Conservation area appraisals and accompanying management plans, particularly for conservation areas identified as at risk of flooding. 	<p>Update of ‘Related Plans, Programmes and Strategies’ in line with comments made by English Heritage.</p>
<p>You may wish to consider reporting on ‘Heritage at Risk’ in 6.3 of the document. English Heritage publish annual registered. In addition, there has been a local programme of identification of heritage at risk, coordinated by Nottinghamshire County Council.</p> <p>In addition to this, other than assets which are designated, and Nottingham Caves, no reference is made to non-designated heritage assets. The historic environment of Nottingham is more than just the</p>	<p>Heritage section updated to cover some of these points</p>

<p>sum of its designated heritage assets; non-designated assets make up an important and valued part of this and it is important they are acknowledged as their protection is required by the NPPF. These should therefore be acknowledged in this document.</p> <p>English Heritage recommends that, wherever possible, data sets are mapped. This will aid the assessment process by helping to identify those heritage assets or groups of assets that may be at most risk from flooding and or potentially impacted by proposed measures to help manage flood risk or improve resilience.</p>	
<p>In regards to the question: “Do you think that the proposed methods for option appraisal are appropriate?”: We are unclear as to what these are as written – table 12 is particularly unclear in terms of what ‘discussion of effects’ actually entails.</p>	<p>Table 12 has been given greater clarity in the Environmental Report.</p>